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MENTAL RETARDATION IN THE INFANT AND PRE-SCHOOL CHILD

DIAGNOSIS AND TREATMENT*

BY

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The subject of mental retardation is such an extensive one that for the purposes of this paper I am confining my remarks to two aspects of the problem in the infant and pre-school child—the diagnosis and treatment.

DIAGNOSIS

There is a difference of opinion whether the future intelligence of a child can be predicted in the first two years. On the one hand, Bowlby (1951) wrote: "Mental tests have no predictive value in the first eighteen months of life." Kirman (1953) wrote: "It is only very seldom that a child of less than 2 can safely be diagnosed as definitely mentally defective." Bailey (1933) compared the score achieved by 49 children in 200 test situations in infancy with their intelligence quotient at intervals till they were 3, and found little correlation. Her patients, however, were selected children of high intelligence. Linfert and Hierholzer (1933) and Furfey and Muehlenbein (1932) found a similar lack of correlation between tests in infancy and intelligence four years later. The opinion given by Bowlby and by Kirman was apparently based on their experience and on the work of others. The opinions expressed in the remaining three papers were based on carefully conducted studies, but on purely objective tests which would fail to take into consideration the child as a whole, including particularly his interest, alertness, and concentration, against the background of his environment.

On the other hand, Gesell (1943) wrote: "Practically every case of mental deficiency can be diagnosed in the first year of life, excluding, of course, the small number of exceptional cases which occur from secondary causes in later infancy or childhood." Gesell *et al.* (1930) wrote that they had carried out developmental examinations on 10,000 infants, and many thousands of babies have been examined since that date. Gesell's opinion, therefore, is based on considerable experience, and it is obvious from his books and from observation of the work in his clinic that his studies are based on painstaking records and follow-up examinations. Hallowell (1932) and Nelson and Richards (1938) found good correlation between the Gesell tests in the first year and Stanford–Binet tests at the age of 3 to 4 years.

It is surely obvious to anyone accustomed to the developmental examination of children that babies who are uniformly backward in development in the first year nearly always remain backward in later years; and that in mentally defective children there is always a history of lateness in passing the milestones of development in infancy, unless, of course, the mental deficiency resulted from trauma, encephalitis, or other condition in later months. I have no doubt that, although there are many pitfalls in the diagnosis, mental retardation can be diagnosed in the first year of life.

The diagnosis is made in four essential stages.

1. Developmental History

It is often said that a developmental history is useless, because parents forget so readily the age at which their children acquired various skills. I disagree with this attitude and attach the greatest importance to the developmental history. In taking a history from anyone it is essential to be certain that each understands exactly what the other means, and then on the basis of one's experience and knowledge of the subject, and one's assessment of the truthfulness and memory of the patient (or his parents, in the case of children), to decide what one can accept or discard. For instance, one knows from experience that if a mother says that her child learnt to sit without support at 11 months and to walk without help at a year she is not speaking the truth or her memory has failed her. One has to balance one statement against another, and the total picture which she gives against one's subsequent objective findings. When one is doubtful about the accuracy of an answer it is often wise to come back to the question later, asking it in a different way, in order to see how the answers tally.

In the case of the developmental history, it is useless merely to ask a mother when her child first smiled, grasped objects, held the head up, sat, walked, talked, or acquired clean habits, for the questions are not precise enough, and the replies will be meaningless. A mother may consider a facial movement during sleep or a contortion of the face from wind to be a smile, whereas the only information of value is the age at which the baby first began to smile in response to her overtures (average 6 weeks). A baby will grasp an object when it is placed in his hand at the age of 3 months, but he is unlikely to go for an object and get it until about 5 months. A baby can hold his head up momentarily when held in the sitting position at 2 weeks of age, but he cannot lift his head up from the supine, lying on a firm surface, until he is about 6 months old. A child can be held in the sitting position at any age from birth onwards, and he can be propped in the sitting position from 4 months or so; he can sit apparently unsupported in a pram a good month before he can sit for a few seconds without support on the floor (average 7 months). He can walk with hands held at 9 or 10 months, but he cannot usually walk without support until 13 to 15 months.

*Based on a lecture given to the Hull Medical Society, November 19, 1954.

Babies at 6 months of age are thought to be "talking" when they say "mum, mm, mm" in crying, and at 8 or 9 months of age when they combine syllables to say "da da da" and "ma ma ma." These are essential steps towards speech, but the child does not usually say one or two words *with meaning* until the age of 10 or 11 months, and put two words together till 21 to 24 months. A child may be said to be clean and dry from the age of 3 or 4 months, but this is merely the result of "conditioning," and not voluntary control. A child does not usually tell his mother that he wants to urinate until 15 to 18 months, and this is the first milestone concerning sphincter control which is of value in diagnosis. Many more examples could be given to show the importance of care and accuracy in taking a developmental history.

The developmental history, in addition to being accurate, must be comprehensive, covering, so far as is possible, all fields of development, and particularly the general understanding shown by the baby. This is essential, for the *cardinal feature of mental retardation in an infant is the fact that he is retarded in all fields of development, except occasionally in sphincter control.* Conversely, no child is seriously mentally backward, provided that his defect is acquired before birth, unless he is backward in all fields of development, except perhaps sphincter control. The history, therefore, must cover not only the sensorimotor development, the age at which he learnt to grasp, roll, sit, crawl, creep, and walk, but, of much greater importance, his general understanding, the interest he shows in things and people, and his powers of concentration. Of value, for instance, is the age at which the baby began to turn his head to sound (average 3 months), to play games, such as peep-bo (average 24 weeks), pat-a-cake (average 40 weeks), to wave bye-bye (average 10 months), to imitate his parents in coughing, putting the tongue out, or knocking on the table (average 6 to 9 months), to excite when he saw the feed being prepared (average 4 to 5 months), to hold his hands out to be pulled up into the sitting position (average 24 weeks), to hold his arm out for the sleeve of a coat or his foot out for his shoe (average 12 months). In addition, it is important to determine the age at which he began to chew (average 6 months) and to feed himself and manage a cup, lifting it up and placing it back on the table without help (average 15 months). The mentally retarded child is late in learning to chew, and if the mother gives him solid foods before he can chew them he is likely to vomit. A history of repeated unsuccessful attempts to introduce solid foods into the baby's diet is very commonly obtained in these cases.

In the older child, from 15 months onwards, it is useful to ask about "domestic mimicry," the age at which the child began to imitate the mother in her domestic duties, sweeping, cleaning, and washing clothes and china. The child's doll play, the way she dresses and undresses it, "trains" the doll in toilet habits, and puts it to bed, is of value in assessing the child. The average child begins to imitate her mother in her domestic work at 15 to 18 months.

In assessing speech it is essential to realize that children learn the meaning of words long before they can articulate them. Some children who are only able to say four or five words can point out the names of dozens of objects in books—a sure sign of good intelligence in a young child.

Other inquiries concern the ability of the child to dress himself and to carry out simple errands in the house, his interests, and especially the degree of concentration which he shows in his play.

With a comprehensive history of this sort the diagnosis is often obvious before one has begun to examine the child. For instance, a 16-months-old baby was seen because he was not nearly walking, and had only just begun to sit up without support. He had learnt to grasp objects voluntarily at 8 months. He was saying several single words with meaning before the age of 12 months, and was playing games, imitating his parents, and anticipating, by laughter, when they were about to play with him, long before his first birthday. The diagnosis was a mechanical difficulty, almost certainly cerebral palsy, involving mainly the lower limbs, with a normal mentality. The diagnosis was readily confirmed by physical examination.

Finally, the developmental history should include questions about the delivery of the baby, his condition immediately after birth and in the subsequent two or three weeks. Particular attention is paid to a history of difficult delivery, asphyxia at birth, cyanotic attacks, cerebral irritability, twitchings or convulsions, and undue drowsiness, with sucking difficulties. A history of birth injury, with either severe asphyxia or cerebral haemorrhage, should make one's prognosis in a retarded infant particularly guarded, for one occasionally sees such a child who is definitely backward in the first months of life catch up to the average level at the age of 1 or 2 years. It should be remembered that, since a mentally backward child is retarded in all fields of development in early infancy, he will correspond at birth, when born at term, with a mentally normal premature baby, so that, like the premature baby, he will be liable to asphyxia, cyanotic attacks, and sucking difficulties. I believe that, although cerebral palsy or mental deficiency can often be correctly ascribed to asphyxia at birth, in some cases the asphyxia may well be the result of underlying cerebral agenesis and not the cause of the defects. It should be noted that the great majority of babies showing severe asphyxia at birth develop normally, without any defect.

One often finds a history of undue drowsiness in the newborn period of retarded children, with defective sucking, disinterestedness in feeds, and frequent regurgitation. Like the normal premature baby, the full-term retarded baby may sleep for the greater part of the day—more than the average intelligent full-term baby does. This tendency to sleep more than the average normal baby often persists for the first few weeks, though, of course, some normal babies sleep much more than others in this period. Mothers of such babies are often very pleased because he is "no trouble at all," or "such a good baby." This often explains the confusing story that "he was quite all right until he was 9 months old."

2. Family and Environmental History

Lateness in certain fields of development, especially walking, talking, and sphincter control, often runs in the family, and therefore a history of this should be sought.

The mother's attitude and management of the child may be important in establishing the diagnosis. Excessive fear of spoiling the child, for instance, may well lead to emotional deprivation and so to some degree of retardation. A child who is left lying out of doors in a pram for the entire day, from the age of, say, 6 months to a year or more, may be retarded in play and social behaviour when compared with a child who has been given normal love and play stimulation. A certain amount of delay in sitting may result from the mother's unfounded belief that the spine would be weakened if the baby were to be propped up in the pram. Some retardation in standing and walking results from the mother's belief that rickets, knock-knee, or bowlegs will result if the child is allowed to bear his weight. Severe illness will retard the development of sitting or walking. Excessive efforts to train the child in clean habits are likely to retard the development of sphincter control. I saw a child of 3 years with incontinence of urine and faeces resulting from excessive toilet training, the child having been soundly smacked from the age of 3 weeks onwards if she did not have a motion or pass urine when placed on the chamber. Most babies who have been brought up from the earliest infancy in an institution are retarded considerably in all fields of development, and it is essential to take this into consideration in assessing such children for adoption. They usually make very rapid strides forward and quickly catch up to the average, if of normal intelligence, when they are placed in a good foster-home.

3. The Examination

The routine physical examination includes inspection for the signs of mongolism, cretinism, microcephaly, and hydrocephalus, examination of the optic fundi for choroidoretinitis, optic atrophy, or other abnormalities, examination for hearing, where relevant, and examination of the urine for phenylpyruvic acid. Signs of cerebral palsy may be detected in this part of the examination, but they will be more likely to be detected during the developmental examination. I personally pay little attention to many of the so-called stigmata of mental deficiency, such as abnormalities of the ear or a high arched palate, because they may occur in otherwise normal children. The date of eruption of teeth is of no value in diagnosis. The date of closure of the fontanelle is so variable that no reliance can be placed on it as a sign of normality of development.

The developmental examination must cover all fields of development if errors are to be avoided, owing to the fact that many normal children are backward in certain fields, such as sitting, walking, or talking, and not in others. The developmental examination was described in detail by Gesell and Amatruda (1947), and was summarized elsewhere (Illingworth, 1953). Ruth Griffiths (1954) recently described a battery of tests for the assessment of babies. Tests for the older pre-school child are described by Gesell *et al.* (1940). Space will not permit of a discussion here of the methods of examination. The examination must be performed at the child's normal playtime, when he is neither tired nor hungry.

As the mentally backward child is retarded in all fields of development there is no need to describe here the usual findings in such a child. Some features, however, are worthy of mention. The first sign of abnormality noted is likely to be the child's lateness in watching his mother's face when she talks to him (an average 4-weeks-old baby watches his mother's face intently as she speaks to him, often opening and closing his mouth and bobbing his head up and down). He will be late in smiling, and in head control, as shown by pulling him to the sitting position, placing him in the prone, or holding him off the couch with the hand under his abdomen. The average 6-weeks-old baby when he is held in the latter position should be able for a few seconds to hold his head up so that its plane is in that of the long axis of the trunk. As he grows older his defective head control becomes progressively more obvious. It is the most important early objective sign of abnormality.

Other features of note in the retarded baby, other than the obvious signs of general retardation, include the lateness in following with the eyes and of taking notice, which so often leads to an erroneous diagnosis of blindness; lateness in turning the head to sound (3 months in an average baby), which often leads to an incorrect diagnosis of deafness; lateness in stopping to drool and to mouth objects (both usually achieved at about 12 months in an average baby, with occasional exceptions in the succeeding weeks); the persistence of the reciprocal kick, long after the age of 9 months, when it is normally lost; and, more important than any of these, the general disinterestedness of the baby, the lack of prolonged concentration, and the slowness with which acts are performed.

On completion of the examination one estimates the level of development reached by the baby in the various fields studied, making, of course, an allowance for prematurity, for if the baby were born, say, two months before term an addition of two months must be made to his age before his level of development can be related to his age. Further examination at an interval or intervals will then show how far the child has progressed in the intervening period, and a much more firm conclusion can be reached than after a single examination. As Kirman (1953) emphasized, delay in diagnosis of mental deficiency is seldom of much importance, except in the case of cretinism. Until one is certain of one's diagnosis, nothing is said to the parents about one's suspicions.

4. Interpretation of the Findings

After the developmental, family, and general histories have been taken, and the physical and developmental examinations have been completed, it remains to interpret the findings, and here serious mistakes can readily be made. Each item in the developmental examination is considered against the background of the history and physical examination, and every possible extenuating factor which would account for a poor performance in an item is taken into consideration. Special attention is paid to lack of opportunities to learn, illness, institutional care, and physical difficulties, such as partial deafness or abnormalities of muscle tone. The tremendous individual variations in the age at which skills are learned are particularly remembered. Special note is taken of a family history of lateness in acquiring skills in certain fields, such as speech. One will not be misled by the child's tiredness, hunger, bad behaviour, uncooperativeness, or shyness in the tests, proper allowance being made for these in interpreting the results. One will discard those items which are clearly influenced by extraneous factors, such as those mentioned above, and in the final assessment one will use only those items which seem to be true indications of the child's development.

One cannot, in other words, write down a score for each of 20 items, add the figures up, divide by 20, and conclude that the figure so obtained represents his present level of development. By trying to be accurate and scientific I believe that one may well arrive at an entirely wrong conclusion. I believe that the most accurate assessment of a child's development is best achieved by a judicious guess, based on a thorough painstaking history and a full physical and developmental examination, interpreted in the light of common sense and experience. No laboratory studies can replace this method of examination. Not even a pneumoencephalogram is sufficient, for Amatruda (1942) demonstrated a lack of correlation between changes in the pneumoencephalogram and developmental performance.

A comprehensive study of the type described will prevent one being misled by a child's peculiar face, epicanthic folds, mongoloid facies, or other physical features which may well lead the unwary into an incorrect spot diagnosis of mental deficiency. Even a considerable degree of hydrocephalus is not incompatible with a relatively normal level of intelligence. One will not be misled by the common lulls of development in speech or other items which occur for no apparent reason when other skills are being actively learnt, or by the extreme stereotypy of behaviour with regard to a single toy or occupation (Gesell, 1943), often seen in a mentally defective child, which superficially resembles a high degree of concentration. Nor will one be misled by apparent advancement in a particular field, which so often impresses parents, in a child who, considered as a whole, is quite severely mentally defective.

The examination will pick up the rare case of infantile autism, the child who superficially looks to be mentally defective because of his remarkable lack of interest in people and his lack of response to affection and social overtures, but who achieves a good score in the developmental examination. One will not make the mistake of overestimating the intelligence of a child on account of his good and attractive appearance. One will be helped to avoid making the mistake of diagnosing mental defectiveness when in fact the child's bad behaviour and absence of speech is due to partial or complete deafness. High-frequency deafness is particularly apt to be missed, because the child hears many ordinary noises and discriminates well between them, but cannot hear sufficiently well to learn language. When a mother is told that such a child is just "lazy," and advised to ignore him unless he speaks, most troublesome behaviour problems are produced, just as they are in children with normal hearing who are late in speaking and who are treated in this way. It is very easy to make the mistake of diagnosing mental defectiveness in these children unless a really full history and examination is made.

One will not rely on intuition, clinical impression, or physical stigmata, but consider the child as a whole. Admittedly any doctor can make an instantaneous diagnosis of mongolism, though there are mistakes. Thanks to the many studies of mongolism, he can predict with considerable accuracy what the child's future achievements will be. Parents, however, are not impressed by such spot diagnoses. They think, quite naturally, albeit wrongly, that the doctor cannot possibly know so much about an individual without examining him. In Arnold Gesell's clinic at Yale no "spot" diagnosis of this kind was ever made. Although the diagnosis and prognosis was immediately obvious as soon as the child was seen, Gesell and his staff treated mongols and other severely defective children in the same way as other children, taking a full detailed history and carrying out a detailed developmental examination, thereafter in conference interpreting the findings. Then and then only did the parents feel that their child had been properly investigated, and as a result not only were they grateful for the trouble taken but they paid real attention to the doctor's verdict. Much of the so-called "shopping round" by parents of mentally defective children from one doctor to another, and their refusal to accept the verdict of mental deficiency, is due to the doctor's inadequate examination and discussion.

Real difficulty is presented by the very occasional slow starter, who subsequently catches up to the average, and who in my experience has always had asphyxia or birth injury, and by the child with severe cerebral palsy, who is retarded in almost all fields of development. It will be impossible to detect the child who, after a period of normal development, will suddenly begin to deteriorate as a result of a degenerative disease of the nervous system or as a result of trauma or encephalitis. With a proper examination, however, I believe that the mistakes made will be few.

TREATMENT

Breaking the News to the Mother

When one is certain of one's diagnosis, and not before, the mother must be told, but not necessarily immediately. It is a matter of opinion how soon the child's retardation should be discussed with her. When a mongol is born it is probably wrong to tell the mother in the first two or three weeks after delivery, when she is in a particularly emotional state, but it may be wise to tell the father, so that when she does hear he will be able to give her some moral support. There is something to be said for allowing the mother to discover the child's backwardness herself: in that case she is likely to discover it between 9 months and a year, when the child is late in learning to sit. On the other hand, this might well cause her to repress her fears and worries about the child before she eventually tells her husband about them. This is undesirable, and she may feel considerable resentment against the doctor for not having told her about the real position sooner. The alternative, which I think is the right one, is to tell her three or four weeks after the baby's birth. It is a matter of opinion whether it is better to dash her hopes and ambitions for the child early or late. I am certain, however, that whatever is decided, it is absolutely wrong to tell lies about the child, saying that he is merely lazy and will eventually be normal or, worse still, that there is nothing wrong, and nothing to worry about. Deception of this nature never does any good. I remember witnessing in Gesell's clinic the resentment and anger of a professional man against his doctor when Gesell told him about his child's mental defectiveness. The child was an 8-year-old mongol, and the parents, at the cost of great personal privation, had paid very high fees for the boy's education in a private school. Only after three or four years did the parents realize that the boy was hardly learning anything, and then they consulted Gesell. No one had given them any idea that there was anything wrong with the boy.

The next question to decide is how to tell the mother about her child's retardation. The first essential is to possess real sympathy and feeling for her, and to realize the appalling tragedy of mental defectiveness. We must admit that medical people, doctors and nurses, see so much human suffering that they become hardened to it. One sees all too often an attitude of complete indifference to a problem of a mentally defective child. I heard a doctor, referring to a teaching round for students, say, "By a stroke of luck there was a beautiful newborn mongol to teach on." When mental deficiency can be diagnosed at a glance there is a tendency for a doctor to give a consultation which is extremely brief, and merely refer the parents to the lady almoner for further information. The lady almoner can help a great deal by advising the parents about facilities for the institutional care of these children, but it is the responsibility of the doctor to discuss the numerous problems of the individual child with his parents, in particular with regard to the diagnosis and prognosis, and the pros and cons of institutional care. The lady almoner will also help the parents by amplifying what the doctor has said about facilities provided for these children in the way of special schools, occupation centres, and home teachers. Where necessary she will arrange help through various statutory and voluntary bodies. She can help a lot to prevent the parents from going away with the impression that nothing can be done to help them in their plight.

It is a good practice for the doctor, having formed his conclusions, to ask the parents what they really think of the child and even to ask them, in suitable words, what is their assessment of his level of development (Jensen, 1950). When they say that they know that the child is backward the doctor agrees with them.

Certain words must be absolutely avoided in the discussion because of the distress which they cause. They are "mental defectiveness," "mental," "imbecile," "feeble-minded," "moron," "idiot," "it's his brain." The best words to use are "backward" or "retarded." It is essential, however, to make it clear that this is not just a temporary backwardness which will right itself. They should know that he will always be backward, and that he will not "grow out of it." It is a mistake to raise false hopes which will subsequently be dashed to the ground. Zwerling (1954) gave a most valuable analysis of the views of parents of defective children on how they should and should not be told about the defectiveness. The paper emphasized the importance of being kind, sympathetic, and gentle in breaking the bad news. Kanner (1953) also discussed this problem.

Parents often feel guilt and bitterness about the defectiveness of their child, and think that the defect is due to some fault of their own. This idea should be anticipated and appropriately dealt with, making it quite clear that the trouble is not due to any infection or mistake in either parent, or to birth injury as a result of bad obstetrical care. In my opinion it is a mistake to delve too deeply into the family history for some evidence of mental deficiency. It does not help, but the unearthing of some case of mental deficiency in some distant relative on one or other side of the family may arouse resentment, conscious or unconscious, between husband and wife.

Every effort should be made to give the parents some idea of the prognosis, making it clear that it is very difficult to give this with certainty until the child is older. It is nearly always possible, however, to say whether the child will learn to walk and talk, and parents are greatly encouraged if they can be told that their child will do this. Only if it is obvious that the I.Q is well below 50 can one say that it is unlikely that the child will graduate to a special school. In the case of mongols, it is most unlikely that they will be able to attend a school for educationally subnormal children, for their I.Q. is usually well below 50. The fact that mongols deteriorate rather than improve should always be borne in mind (Gesell, 1943). Gesell wrote: "The typical mongol is developmentally at his best during the first year of life. In the first weeks some of his behaviour may be at a relatively normal level. But he soon

displays a retardation which increases as he grows older." The average mongol sits without support at 1 year, walks without help at 2, says single words at 3, feeds himself at 4, acquires clean habits at 5, and puts words into sentences at 6.

Zwerling (1954) and others have emphasized the importance of not dwelling too much on the negative side, the difficulties which will have to be faced, and the problems which will arise, but rather of drawing attention to the assets, and to the possibility of the parents leading a relatively normal life in spite of the child's backwardness.

The doctor usually has to advise the parents about the risk of another child being affected. The risk depends in large part on the nature of the defect. In most cases of primary amentia, in which no sibling or other near relative is affected, it is reasonable to say that there are about 24 chances out of 25 that a further child will be normal. The risk of abnormality is much more than it is for the normal population, but a much smaller risk than many believe. The risk is, of course, greater if another child is affected, or if there is a strong family history of the same complaint. It is very unusual indeed for a second mongol to be born to a woman, but it has happened. It is much less likely to occur if the mother is young than if she is elderly. If, on the other hand, the child has some familial degenerative disease of the nervous system, such as Schilder's disease, or other condition with a strong hereditary tendency, such as epiloia, Tay-Sachs's disease, gargoylism, or phenylpyruvic oligophrenia, then the risk is much greater. In cases in which there is a considerable risk of a repetition of the tragedy, or in which the parents are unwilling to take the risk, the question of adoption should be seriously considered. The parents may want to know whether there is any risk that their other normal children will become affected as they grow older; they can be reassured about this, unless the child has a familial degenerative disease of the nervous system.

It is always better to see the parents a second time, not only in order that one can reassess the child, but also to answer further questions which may occur to them and to rediscuss points which they have not fully understood.

Advice Concerning Management of the Child

It is scarcely possible for the fortunate possessor of normal children to realize how very difficult it may be to manage a mentally retarded child, particularly when he is of the destructive type.

It is very easy to ascribe much of the bad behaviour of backward children to the inherent retardation, whereas in fact it is due to parental mismanagement and lack of discipline. These children must be taught discipline like any others, but it is a slow and difficult process. Like normal children they must not be allowed to have all their own way, for overindulgence will do nothing but harm to them. They must not be overprotected, except in the sense that more than normal care has to be taken to prevent accidents. They must be taught independence. The natural reaction of the parents of children with any kind of defect, physical or mental, is to do everything for them, instead of teaching them to become independent. A good residential school for retarded children can bring about a great improvement in backward children by teaching them to feed and dress themselves and attend to their own toilet needs. The process will be slow, but it will be well worth while. The teaching of independence is the main theme of the book by Loewy (1951).

Retarded children need love and security, and much harm can be done by talking in front of them about their failings, or by making unfavourable comparisons between them and their siblings or friends. I once heard a mother say, "Mary has always been a big disappointment to us. She is not nearly as clever as her two sisters." This would inevitably cause a great deal of distress in the child's mind and make her feel unwanted, unloved, and insecure. No retarded child should ever be ridiculed for his failings. The greatest care should be taken to avoid showing favouritism to the more intelligent siblings.

Another important aspect of management is the importance of not expecting too much of the child, by not trying to teach discipline before he is ready for it, of not demanding obedience, conformity, manners, and habits of which he is not capable. It is hard enough for parents not to expect too much of the normal 5- or 6-year-old child. It is very difficult for them not to expect too much of a 6-year-old child with a mental age of 2 or 3. The parents have to realize that the retarded child is not just lazy, and that he cannot be forced to learn. His concentration is poor, and excessive efforts to make him learn, by constant efforts to teach him, will do nothing but harm by causing discouragement and insecurity.

As for toilet training, many retarded children acquire clean habits at the normal age. Others are late and are difficult to train. Loewy (1951) has useful advice to offer and suggests that the children should be taught to retain their urine longer and longer during the day, avoiding, however, accidents.

The books by Loewy (1951) and Macdowall (1930) are helpful to parents. The leaflet by Majorie Shave (1951) and the pamphlet by the National Association for Mental Health (1950) will help parents. Parents are also helped by joining the local branch of the National Association for Parents of Backward Children (central address: 39, Queen Street, London, W.1).

Special Treatment

No drug treatment is of any value, except in the case of hypothyroidism. It has been adequately shown by many workers—for example, Loeb and Tuddenham (1950)—that glutamic acid is of no value.

Surgical treatment is of value only in special cases. McKissock (1953) performed a hemispherectomy in retarded children with cerebral palsy of hemiplegic type with fits which could not be controlled, achieving considerable improvement in their condition. Premature closure of the cranial sutures, also termed craniostenosis, is an important though rare cause of mental deficiency, and it is essential that it should be diagnosed early. It should be suspected whenever a baby or child presents with a deformity of the skull other than the flattening on one side of the head due to the baby lying on that side. The condition is cured by surgery (Faber and Towne, 1943), so that the normal growth of the brain can proceed. Even though retardation has already developed, the operation should be performed in the young child in the hope that further growth of the brain may occur. In the case of hydrocephalus something can be done to arrest further mental deterioration and to check the increase of the hydrocephalus by arachnoid-ureterostomy (Matson, 1953) and other operations. Proper treatment of subdural haematomata (Ingraham and Matson, 1944) falls more into the realm of prevention of mental retardation than treatment, but even in the presence of retardation a subdural haematoma should be properly dealt with in order to prevent further deterioration. The operation for anastomosis of the internal carotid artery to the internal jugular vein (Beck *et al.*, 1949), devised to increase the cerebral blood flow in mentally defective children, has now largely fallen into disrepute.

Fay (1932) advocated severe fluid restriction in cases of birth injury, in order to prevent further damage to the brain by reducing the intracranial pressure and to minimize the damage already done, but it is doubtful whether this treatment achieves anything. Bickel *et al.* (1954) suggested that a phenylalanine-low diet should be given to cases of phenylpyruvic oligophrenia, on the grounds that the high level of phenylalanine or its breakdown products in the blood and C.S.F. may be partly responsible for the mental retardation. Woolf *et al.* (1955) claimed good results by such treatment. It is extremely unlikely that speech therapy will help mentally retarded children to learn to speak, because they cannot speak until there is sufficient maturation

of the nervous system; but speech therapy does help when a retarded child has learnt to speak but is speaking indistinctly (dyslalia).

When no special treatment, especially surgical, is possible, as is nearly always the case, this should be made quite clear to the parents at the interview, so that they do not collect opinions from other doctors.

The Question of Institutional Care

The question of placing a child in an institution arises only with the severer cases of mental retardation, which include mongols. Once more it is most difficult for those who are fortunate enough to have normal children themselves to give a really balanced opinion on this subject, for they cannot fully appreciate the far-reaching effects a defective child has on the home and the parental reactions to them.

When the question of institutional care does arise there are many aspects to be considered. In the first place, the ultimate decision must be that of the parents. Many doctors make the mistake of being too dogmatic about what they consider to be a right or wrong course in this matter, and try to insist that the parents should have the child placed. It is the duty of the doctor to discuss all the pros and cons of the matter with the parents. Once more, he should not shelve the responsibility and leave it to the lady almoner. In a matter as important as this the doctor, with his knowledge, experience, and authority, should be the one to advise the parents.

The factors to be considered include the following:

(1) *Degree of Retardation and Type of Defectiveness.*—Although, in general, mongols are relatively easy to manage in the private house, not all are, some of them being aggressive and destructive. It is uncertain how many of the difficulties sometimes met with in these cases are due to mismanagement in the home. There is practically no alternative to institutional care for the hyperkinetic destructive idiot, who is a full-time occupation for the mother, and prevents her attending to the house and the rest of the family.

(2) *Parental Attitude.*—When it is clear that the parents are very closely attached to a defective child, such as a mongol, it is rarely wise even to broach the question of institutional care. Many good mothers feel that if they have given birth to a defective child, that child is entirely their responsibility, and they are determined to keep him at home, however bad he is. It is quite wrong to argue against such a laudable instinct, unless the child will cause trouble between husband and wife or have a bad effect on siblings (see below). If it is felt, however, that in future years the child is going to become more and more difficult for the mother to manage, then the matter will have to be discussed, because the waiting-list for institutions is such a long one—usually a matter of several years, and there is a lot to be said for putting the child's name on to a list. By so doing the parents are not committing themselves to anything, though he will have to be "ascertained." If the parents are seen to be resentful and bitter, and to be rejecting the child, there is much to be said for institutional care. Such a child will lose little, whereas the much-loved mongol will lose by being separated from his parents. Kirman (1953) remarked: "The decision to place a child in an institution on account of mental defect is almost never in the child's interest, but it may be in that of another child or in that of the parents themselves."

(3) *Age of the Mother.*—An elderly mother is more likely to find it difficult to manage a defective child at home. On the other hand, an elderly mother who has no other children and on account of her age cannot have further ones—a common position in the case of mongols—may well find it much better to have even a defective affectionate child of her own than not to have a child at all.

(4) *Effect on Siblings.*—This depends partly on their age. If the siblings are younger than the defective child they may well suffer because the mother gives all her time and attention to the defective one and has no time left for the normal children. Otherwise it is a matter of opinion how much siblings suffer from the presence of a defective child in the family. It has been said that it may help them to learn kindness to less fortunate people than them. They are likely to feel embarrassed at having an obviously defective child in the home, but it is doubtful whether the defective child should suffer on that account. There is no need to allow the presence of a severely defective child to prevent all possibility of holidays, for the child can be placed in an institution for two or three weeks in the year so that the family can get away, and it is important that they should have a break like this. Local authorities can make provision for such short-term stays; and if parents can afford to pay, it can be arranged with private institutions. It is important to consider what will happen to the defective child when the parents die. It may well be most undesirable and unfair to leave him on the hands of the siblings.

(5) *Effect on Prevention of Further Pregnancy.*—When the first child is severely defective parents are sometimes prevented from having further children, however much they would like to have them, because the mother finds her defective child a full-time occupation. There is much to be said in such a case for recommending institutional care for the child.

(6) *Availability of Institutions.*—The great difficulty of placing children is well known. It is easier when parents can afford to pay the fees of private institutions. It is doubtful, however, whether they are justified in paying very high fees for private institutions when the placement is made entirely for the sake of the child's education. The fees of a well-known institution in the United States vary from 3,600 to 6,000 dollars a year. A mongol will certainly learn something in a good private institution, but he learns so little more there than he would in a good home that it is very doubtful whether the expenditure is justifiable.

(7) *Social Circumstances.*—Overcrowding at home, and the economic and social circumstances, must be considered.

(8) *Time of Placement.*—In the United States it is a common practice to prevent the mother seeing a mongol when it is born, and it is immediately placed in an institution. Some mothers might well have a considerable feeling of guilt if that is done. There is much to be said in favour of parents keeping the child at home for a time, and if they find that, in spite of loving care and attention and every possible effort to manage him, he is unmanageable and learning nothing, they will be much less likely to have a feeling of guilt when the child is placed in an institution. It may be argued that it is more difficult emotionally for mother and child if placement is delayed. That may be partly true.

There is always a small chance of a doctor making an incorrect diagnosis, and it would be a tragedy if a baby were placed in an institution as a mongol when he is no such thing. The diagnosis is usually obvious in the newborn period, but it can be difficult.

Finally, parents who are finding it difficult to decide whether to part with a child or not, should read Pearl Buck's book (1951) *The Child Who Never Grew.*

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ASPIRIN AND ULCER

BY

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It has been known for many years that the taking of aspirin may cause dyspepsia. The observations of Douthwaite (1938), Douthwaite and Lintott (1938), and Hurst and Lintott (1939) indicated that serious gastric haemorrhage could also occur following the use of aspirin, particularly on an empty stomach.

Douthwaite and Lintott made a detailed gastroscopic study of the reactions of the gastric mucosa to the ingestion of gastric irritants, with particular reference to aspirin. They examined 16 unselected patients shortly after the administration of 15 gr. (1 g.) of crushed aspirin in 1 oz. (28 ml.) of water and found that 13 of them developed a mucosal reaction varying from slight hyperaemia to intense congestion with submucous haemorrhages. These reactions were localized to the area immediately surrounding adherent aspirin particles and were maximal on the lesser curvature. A further five patients were gastroscoped after the administration of 15 gr. (1 g.) of calcium aspirin, and one showed a very mild reactive hyperaemia only. To ascertain if free salicylic acid, known to be present in certain brands of aspirin tablets, was responsible for the reaction, two further patients were examined by the same technique, substituting salicylic acid for aspirin. Both showed a positive reaction, but in neither case was it more intense than that which had frequently been seen to result from aspirin alone.

Hurst and Lintott gastroscoped a patient with a history of repeated haematemesis and actually saw bleeding occurring from the intensely hyperaemic areas surrounding two large portions of aspirin tablet.

Wolf and Wolff (1943) were unable to produce an aspirin reaction in the gastric mucosa of their subject Tom, and Paul (1943) was unable to find any evidence of gastric irritation from aspirin on carrying out 1,000 gastroscopies. This latter work has recently been criticized by Douthwaite (1954) on technical grounds.

The present investigation, prompted by the personal experience of one of us, was started in 1947. It was decided to investigate fully the possible harmful effects of aspirin on the stomach, particularly in patients with peptic ulcer.

Experimental

A group of 20 patients, each suffering from radiologically confirmed peptic ulceration, were selected, and in each of them three standard caffeine–citrate fractional test meal examinations were performed at intervals of a few days. The first test was done normally to serve as a control. After the removal of the fasting juice during the second and third meals, two bland calcium lactate tablets and two 5-gr. (0.32-g.) aspirin tablets were given respectively, uncrushed, with a little water. Specimens were removed at half-hourly intervals until the stomach was empty. Each specimen was tested for free and total acidity and examined for blood chemically and by naked eye. In 15 of these patients faecal occult blood tests before and after the aspirin test meal were made by the Gregersen method. The simple fractional test-meal was chosen with a full knowledge of its limitations in place of the more accurate serial test meal, since the chief interest in each specimen was the presence or absence of blood and not its chemical content.

It will be seen from Table I that aspirin tended to increase gastric acidity and that evidence of gastric irritation, as shown by the presence of blood-stained mucus in the test-meal specimens, was commonly present.

Thus in five patients (Cases 1, 3, 5, 6, and 20) blood-staining of the specimens was observed during the aspirin test meal alone. In one (Case 7) it was much greater than had been observed during the calcium lactate test meal; in two (Cases 10 and 15) it was similar; and in one (Case 14) it was less. The blood seen with the control test meals, presumably traumatic in origin, was often fresh red blood appearing in the syringe at the end of withdrawal of a specimen. The blood found in the aspirin test meals was in the form of blood-stained mucus and clots of altered blood, and once it had appeared it remained constant and sometimes increased to the end of the test.

A further point of interest was the conversion by aspirin of a previously consistently negative test for faecal occult blood to a strongly positive one in three patients (Cases 3, 5, and 6).

Pathology

In order to study directly the effect of aspirin on the stomach two uncrushed 5-gr. (0.32-g.) aspirin tablets with a little water were given to a series of patients approximately two hours prior to gastrectomy for peptic ulceration. Shortly after their removal the specimens were examined macroscopically for evidence of gastric irritation, and later microscopically. An initial 20 gastrectomy specimens were studied before these investigations to gain some knowledge of the effect of trauma, the presence of gastritis, etc., in routine gastrectomy specimens. In the first 20 patients an ordinary commercial brand of aspirin was given, in the second 20 a specially hard type of aspirin tablet was used (see below), and in the last 20 soluble calcium aspirin ("disprin") was given. Gentle gastric aspiration, but not lavage, was done by the anaesthetist just before operation, but it was felt that this could not alter significantly any evidence of gastric irritation.

Of the 20 patients who received ordinary commercial brand aspirin, 8 showed no evidence of mucosal irritation. A little mucosal oedema and congestion, a few scattered petechial haemorrhages, especially near the more massive interstitial haemorrhages of clamp marks, and some flakes of adherent mucus were present, but these were also present in a few of the initial control group and were disregarded. In the remaining 12 patients evidence of mucosal irritation was present macroscopically in the form of an acute gastritis. In 9 of these the condition was relatively mild, but

TABLE I.—*Effect of Aspirin on Fractional Test Meal*

Case No.	Type of Ulcer	Previous Aspirin Dyspepsia	Standard Test Meal	Calcium Lactate Test Meal	Aspirin Test Meal	F.O.B. Before Aspirin Test Meal	F.O.B. After Aspirin Test Meal
1	Duodenal	Yes	Hyperchlorhydria ++. No blood		Hyperchlorhydria. Blood-stained mucous (+) in specimens 2–5	+	+++
2	Duodenal with stenosis	Did not know	Plateau curve. Hyperchlorhydria +. No blood		Hyperchlorhydria +. No blood	+	+
3	Duodenal	None	Plateau curve. Hyperchlorhydria ++. No blood		Plateau curve. Hyperchlorhydria ++. A little blood-stained mucous (+) in specimens 1–2	−	+++
4	"	"	Hyperchlorhydria ++. No blood		Hyperchlorhydria +++. No blood	−	−
5	"	Yes	Hyperchlorhydria +++. No blood		Hyperchlorhydria +++. All specimens grossly contaminated with blood-stained mucus and altered blood (+++)	−	+++
6	Gastric	None	Low acidity. No blood	Hyperchlorhydria +. No blood	Hyperchlorhydria ++. Last 4 specimens markedly contaminated with clots of altered blood and blood-stained mucus (++)	−	+++
7	Duodenal	Never taken any	Low acidity. A little altered blood (+) in three middle specimens	Hyperchlorhydria ++. A little altered blood (+) in all specimens	Hyperchlorhydria ++. All specimens showed considerable blood-stained mucus and threads of altered blood (+++)		
8	Stomal	"	Normal acidity. No blood		Normal acidity. No blood		
9	Duodenal	None	" "	" "	" "	−	−
10	"	"	Hyperchlorhydria ++. No blood	Hyperchlorhydria ++. A little fresh blood in last 3 specimens (+)	Hyperchlorhydria ++. Last 4 specimens showed flecks of clotted blood and blood-stained mucus (+)	−	+
11	"	"	Hyperchlorhydria ++. No blood		Hyperchlorhydria ++. No blood	+	+
12	"	"	" +++ " "		" +++ " "	−	−
13	"	Yes	" ++ " "		Normal acidity. No blood	−	−
14	"	Not sure	Hyperchlorhydria +. A little altered blood in all specimens (+)	Hyperchlorhydria +. No blood	Hyperchlorhydria +++. No blood	−	−
15	Duodenal with gastroenterostomy	Yes	Hyperchlorhydria ++. Considerable blood-staining of all specimens (++)		Hyperchlorhydria +++. Altered blood in all specimens (++)	−	−
16	Duodenal	Never taken any	Hyperchlorhydria ++. No blood		Hyperchlorhydria ++. No blood	+	−
17	Gastric	"	Normal acidity. No blood		Low acidity. No blood	+	+++
18	Duodenal + gastric	Yes	Low acidity. No blood		" " " "	−	−
19	Gastric	None	Very low acidity. No blood	Achlorhydria. No blood	Very low acidity. No blood		
20	Duodenal	Yes	Hyperchlorhydria +. No blood		Hyperchlorhydria +++. Altered blood in all specimens (++)	+	+++

in 3 it was severe. The lesion was always most marked in the pyloric antrum and on the lesser curvature (see Fig. 1). It was patchy and varied in intensity in the same specimen. The mucosa was congested and oedematous, with flakes of adherent mucus containing aspirin fragments and often altered blood. Multiple erosions were visible to the naked eye in 5 of them, and microscopically in all. They were maximal along the summits of the rugae, frequently contained a tiny fragment of aspirin, and were surrounded by an areola of intense hyperaemia.

Microscopically the lesion showed congestion of mucosal capillaries and oedema of interstitial tissues with polymorphonuclear and round-cell infiltration. Glandular erosion, flattening, and dark staining of the mucosal epithelium with polymorphonuclear-containing vacuoles between cells and typical erosions were all seen—that is, the picture was typical of an acute erosive gastritis (Magnus). In the 3 specimens in which this was severe the aspirin left in the stomach was in large portions and the mucous reaction was noticeably poor. The erosions were larger and were obviously produced by firmly adherent particles of aspirin which remained *in situ* and had to be picked from the erosion in order to see it.

In one of these cases half an aspirin tablet was found deeply embedded in the mucosa of the greater curvature lying beneath the overlapping edge of an oedematous and congested ruga (see Fig. 2). It proved impossible to pick this out without damaging the specimen. When it was eventually removed a lesion showing the features of an acute peptic ulcer rather than a simple erosion was visible. Its floor was covered with a greyish fibrinous exudate and it penetrated into the submucosa. A localized serosal congestion indicated its site.

Of the 20 patients who received specially hard aspirin tablets, 12 showed no definite evidence of gastric irritation. The remaining 8 showed typical acute erosive gastritis, mild in 3 cases, moderately severe in 5. No severe lesions as described above were seen in this series. These findings were unexpected in view of the frequency with which large

FIG. 1

FIG. 2

FIG. 1.—Adherent aspirin particles have been removed from the gastric mucosa of the pyloric antrum, revealing a few erosions, in this case rather circular and punched-out in appearance. The congestion is poorly shown in this type of photograph. FIG. 2.—The small aspirin ulcer is clearly visible, with a crust of aspirin still *in situ*.

portions of residual aspirin were found in the stomach. It was anticipated, as a result of the findings in the first series of cases studied, that this would increase the incidence of the more severe type of lesion. The reason for this failure to do so was obvious, however, when the extent of the mucous reactions in this series was observed. In almost all cases the residual aspirin was coated in a thick capsule of dense mucus. In one case practically an entire aspirin tablet was found so coated. It is reasonable to assume that defective mucous reaction was an important factor in causing the severe lesion observed in the three cases of the first series.

Of the 20 patients who received soluble aspirin 18 showed no mucosal reaction. In the remaining two a very mild reaction was seen, not definitely classified as abnormal.

Microscopically the majority of these 60 specimens showed a chronic gastritis, severe in the 7 showing gastric ulceration and relatively mild in the remaining 53 patients with duodenal ulceration.

Acute erosive gastritis is a known complication of gastric ulceration. Magnus (1946) gives a figure of 7% for its presence macroscopically in a series of 284 gastrectomy specimens, but Puhl (1927) (27%) and Konjetzny (1930) (100%) give a much higher figure. Magnus (1946) admits that, microscopically, a mild acute erosive gastritis of the pyloric antrum is commonly seen in gastric ulcer specimens, but denies its frequency on naked-eye examination.

In the case of duodenal ulceration, macroscopically evident acute erosive gastritis is rarely seen. Magnus (1946) found it only very occasionally in 256 gastrectomy specimens, and it was always very mild. Walters and Sebening (1932) agree with this conclusion, but Puhl (1927) found it more frequently.

The specimens in this series showing the most severe acute erosive gastritis were all from patients with duodenal ulceration. Moreover, the erosions were obviously the result of the local irritant action of aspirin, since they often took the shape of the aspirin granule, which remained *in situ*.

As a preliminary investigation approximately 300 people, representing an average cross-section of the community, were questioned about aspirin intolerance without reference to their previous medical history. Approximately 1 in 20 confessed that aspirin gave them dyspepsia—heartburn, sometimes nausea, and occasionally epigastric discomfort. The following clinical investigations were then made:

Clinical Investigations

1. Aspirin Intolerance in Peptic Ulcer

A series of 318 patients suffering from peptic ulcer were questioned on a similar point. All of these had a definite opinion to express. As in the control series above, if they had not taken aspirin often enough to be able to express such an opinion they were not included.

Approximately one-third (110) were well aware that aspirin could be taken only at the risk of a bout of dyspepsia. Again the chief symptom was heartburn, but some of them were sure that ulcer pain could be aggravated or restarted by taking aspirin on an empty stomach, and so avoided it entirely.

2. Aspirin as a Cause of Breakdown of Peptic Ulcer

A group of 83 patients suffering from peptic ulceration were selected on the basis of their past history. Each of them had periodic bouts of ulcer pain with long complete remissions. It was hoped that by detailed questioning some idea of the factors causing their latest clear-cut breakdown could be gained, with particular reference to the taking of aspirin. Thirty-four of these patients suffered from gastric ulcer and the remainder from duodenal ulcer. Recurrence of symptoms could in most cases be pin-pointed to a particular day, and questions were directed to the period immediately preceding it. Fourteen gastric ulcer patients and 19 duodenal ulcer patients admitted to taking aspirin less than 24 hours before the recurrence of their symptoms. Moreover, 8 of these patients blamed aspirin because of similar previous experiences, some of them having been misled by the wording of the advertisements of a popular brand, others taking headache powders which they did not know contained aspirin.

The following two histories are typical of the group:

Case 1.—A woman aged 67 had suffered from gastric ulceration with haematemesis at the age of 21. Symptoms had lasted for a year intermittently after her discharge from hospital and then completely disappeared. She remained healthy until February, 1952, when osteoarthritis of her right hip developed. The pain became severe and she consulted her own doctor in July, 1952. He prescribed aspirin, two tablets three times a day after meals—the first time the patient, to her knowledge, had ever taken aspirin. On the first day of this regime she developed dyspepsia of gastric ulcer type—epigastric pain and vomiting 20 minutes after a meal. This persisted for four days, during which time she stopped taking aspirin, and culminated in a moderately severe haematemesis, for which she was admitted to hospital. Radiologically a small lesser-curve gastric ulcer was subsequently demonstrated; this healed rapidly on routine treatment, and has remained healed to date.

Case 2.—A garage mechanic aged 29 had suffered from duodenal ulcer for 11 years. His symptoms had improved on routine medical treatment, and in the previous four years he had had only three bouts of ulcer dyspepsia, each lasting about a fortnight. The bout causing his visit to hospital started on July 16, 1953. For four days prior to this he had taken two aspirin tablets night and morning for "rheumatism of the back." His penultimate bout was a year previously, and immediately before it he had taken aspirin for a few days to relieve the pain of a crushed finger. He remembered taking aspirin four years previously for a strained muscle, and recalled that it coincided with his only period off work with ulcer symptoms. In the previous four years, therefore, his three bouts of ulcer dyspepsia had been immediately preceded by the only periods in which he had taken aspirin.

3. Aspirin as a Cause of Chronic Dyspepsia

In seven years 15 patients (11 female and 4 male) with major dyspepsia were seen who were habitual aspirin takers, and who were cured of their dyspepsia by its withdrawal. Chronic heartburn was a prominent symptom in each, but epigastric distress after meals, flatulence, nausea, and vomiting were all occasionally present. Moreover, three of these patients gave a history of gastric bleeding—a single episode in one, but repeated in the other two. As the result, each of these three patients was regarded as a peptic ulcer case in spite of frequent negative *x*-ray films of the upper alimentary tract, and one (Case 3) had a laparotomy for possible gastrectomy.

Case 3.—A woman aged 47 had had dyspepsia for 11 years. This consisted of upper abdominal discomfort immediately after meals, heartburn, nausea, and occasional vomiting. She had spent four periods in different hospitals during this time because of haematemesis and melaena. Each haemorrhage was relatively mild, but it recurred on one occasion several times in the course of a few days (September, 1949). Each time a subsequent barium-meal examination was negative, and no cause could be found for her dyspepsia and haemorrhage, although a gastric ulcer was suspected on every occasion. On her fourth admission, to a larger hospital, in May, 1950, a gastroscopic examination was made two weeks after her haemorrhage. No ulcer was definitely seen, but an area of mucosal hyperaemia was seen low down on the lesser curvature, possibly indicating the site of an ulcer invisible to the gastroscopist. In view of her history a laparotomy was done; but apparently nothing was found to warrant resection, since she was discharged home shortly afterwards with a tentative diagnosis of gastric ulcer.

Within a few weeks her dyspepsia started again and she was once more referred to hospital. On this occasion she volunteered information that she had taken at least one, and often as many as three, headache powders a day for many years to "settle her nerves." She herself suspected that this was the cause of her indigestion, as she knew that during her periods in hospital, while on holiday, and occasionally at other times when she stopped taking the powders she did not have indigestion.

She lived alone on her earnings as a cleaner, her husband having died early in her married life, leaving her childless. She was much happier in hospital than she was at home and had little to gain in having her dyspepsia cured. The laparotomy had

frightened her, however, and she spoke of her habit and her belief that it was the cause of her dyspepsia. She has remained symptom-free for two years on ordinary diet without her headache powders.

4. Aspirin and Haematemesis

All haematemesis patients seen by us since 1949 have been questioned about the taking of aspirin prior to their haemorrhage. A total of 166 patients were questioned (117 males and 49 females). The presumed cause of bleeding in these patients is shown in Table II.

TABLE II.—*Cause of Bleeding*

	Males	Females
Chronic duodenal ulcer:		
Proved radiologically or at necropsy	54	14
History very suggestive of chronic duodenal ulcer but no radiological evidence	17	2
Chronic gastric ulcer, including stomal ulcer:		
Proved radiologically or at necropsy	14	17
Suggestive history but radiologically negative	4	1
Acute lesion group (i.e., no previous history dyspepsia and subsequent gastric investigation negative)	23	11
Miscellaneous group (i.e., gastric carcinoma, portal hypertension)	5	4
	117	49

The answers are summarized in Table III.

TABLE III

	Admitted Taking Aspirin Prior to Haematemesis		
	Within 24 Hours	Within 12 Hours	Within 6 Hours
Presumed chronic duodenal ulcer group	34	32	28
„ „ gastric „ „	17	14	10
Acute lesion group	21	18	16
Miscellaneous „	1	0	0
	73	64	54

Approximately one-third of all patients in this series of haematemesis had therefore taken aspirin within six hours of their haemorrhage. Furthermore, in the group of patients whose haematemesis was based on some acute lesion the figure was nearer to 50%.

As a control series to the above the occupant of the bed on the patient's right was similarly questioned. Approximately 1 in 20 admitted to taking aspirin within six hours of admission.

It was impossible to believe, however, that the taking of aspirin was a major cause in one-third of all cases admitted with haematemesis. A further analysis of the histories was therefore made with this in mind, and it was found that the patients could be divided with reasonable accuracy into three groups.

Group 1

These patients were in the habit of taking aspirin so frequently that it appeared likely that they would have admitted to taking it within six hours of their admission, no matter what illness occasioned it. Eleven patients were placed in this group—7 with duodenal ulcer and 4 with gastric ulcer. Each had taken aspirin regularly for many months for various complaints, without signs of intolerance.

Group 2

These patients were in the habit of taking aspirin frequently, but their histories indicated definite signs of aspirin intolerance and it was thought that aspirin may well have contributed to their haematemesis. Twenty-two patients were placed in this group—13 with duodenal ulcer, 2 with gastric ulcer, and 7 with haematemesis of the acute lesion group. The following histories are typical.

Case 4.—A woman aged 53 had suffered from gastric ulceration for seven years. Four years ago rheumatoid arthritis had developed, causing considerable pain. She found "veganin" of great value for this, and took two tablets regularly when the pain was particularly bad. Invariably she found that these tablets seriously aggravated her ulcer symptoms. She discovered that she could minimize this if she took the tablets on a full stomach with a glass of milk containing soluble alkali. For a year previous to her admission she had a remission of both her arthritic and gastric symptoms. She then developed a severe attack of low backache, and on the morning of the day of admission she took two veganin tablets on an empty stomach immediately on rising. About half an hour later epigastric distress, heartburn, and some vomiting occurred, and the vomit was seen to be streaked with fresh red blood. The vomiting relieved her epigastric discomfort, but an hour later she suddenly vomited about a pint (570 ml.) of fresh red blood and was admitted to hospital. She made an uneventful recovery, and three weeks later *x*-ray examination revealed no evidence of gastric ulcer.

Case 5.—A man aged 37 had formed the habit of taking a popular brand of headache powder to help him to sleep. He took one at least thrice a week, about three hours before retiring, and was aware that they often upset his stomach, causing heartburn and occasional epigastric discomfort, which he relieved by taking soluble alkali. On the night of December 23, 1953, he took a headache powder at 9 p.m. but could not sleep. He took another at 11 p.m. and a third at 1.30 a.m. Shortly after this he developed severe heartburn and waterbrash, burning epigastric discomfort, and vomiting. He was sick twice and noticed a few fresh blood clots in each vomit. At 6.30 a.m. he collapsed in the bathroom and was admitted to hospital with melaena.

Group 3

The remaining 21 histories indicated that aspirin was the major factor in precipitating the haemorrhage beyond any reasonable doubt. In 9 the haematemesis was of unknown origin—that is, the acute lesion group—8 suffered from known duodenal ulcer and 4 from gastric ulcer. The patients in this group took aspirin rarely—7 of them, all without a previous dyspeptic history, taking it for the first time. The histories were all very similar, usually two uncrushed aspirin tablets being taken on an empty stomach. Whether or not a known gastric lesion was present, shortly afterwards epigastric discomfort and heartburn occurred and the patient vomited blood. Seldom did any of them volunteer the information that aspirin had been taken. Usually they had to be asked directly. Many of them were aware that aspirin upset their digestion, but took it in spite of this knowledge. The following histories are typical of this group.

Case 6.—A well-known professional middle-distance runner gave up running because of the occurrence of haematemesis following his last three appearances. He admitted that he was usually sick after a race and that on these occasions he had brought up some fresh blood and suffered considerable epigastric distress before vomiting. He had no previous history of dyspepsia, and on questioning he admitted that he had taken two tablets from his trainer before each of his last three races. This was done on the advice of another runner, who thought they helped him to relax. On inquiry these tablets were found to contain 3 gr. (0.2 g.) of aspirin. The patient had never taken aspirin in his life apart from these three occasions.

Case 7.—A medical practitioner aged 26 had had symptoms of duodenal ulcer for four years. He took two aspirin tablets for the first time in his life in January, 1948, for a headache. An hour later, without any preliminary dyspepsia, he collapsed with a moderately severe melaena. He had been symptom-free for some months, and thought that aspirin had contributed to his haemorrhage, deciding to take no more. Two years later, on a fishing trip, he developed a severe headache and reluctantly accepted two aspirin tablets from a colleague. Again he had been free from symptoms of duodenal ulcer for several months. An hour later he developed severe epigastric pain which persisted for several hours. On arrival home he vomited and saw that the vomit contained altered blood. He stayed in bed for the next few days on strict diet and alkali, and made a rapid recovery.

5. Aspirin in Perforated Peptic Ulcer

In view of the above rather surprising findings a similar procedure was adopted in all cases of perforated peptic ulcer admitted to the surgical unit in this hospital within the period October, 1953, to October, 1954. Forty-four patients were questioned—31 with duodenal perforation, 12 with gastric perforation, and one with stomal ulcer perforation. Recently admitted patients of a similar age group were also questioned for control purposes. Only one patient admitted taking aspirin within six hours of acute duodenal perforation. A positive aspirin history was found in none of the control group.

Discussion

It is evident that aspirin may act as a severe gastric irritant in some people. This is particularly true of patients with peptic ulcer, one-third of whom are intolerant in varying degree to aspirin. The basic lesion produced by aspirin in such circumstances is an acute erosive gastritis, sometimes of surprising severity. In favourable circumstances—that is, the combination of a poor mucous reaction and the retention of relatively large portions of insoluble aspirin in the stomach—the lesion produced may be acute peptic ulceration, as was demonstrated in one specimen.

If we accept Forssell's (1938) hypothesis on the action of the muscularis mucosa—that is, a gripping action on solid particles, causing them to become imbedded in the mucosa—it is not surprising that an irritant insoluble particle gripped in this way for a sufficient length of time may result in the production of a lesion similar if not identical to an acute peptic ulcer. In the group of patients who received a particularly hard brand of aspirin—that is, one which did not readily break down into fine particles in contact with a solution—the effect on the mucosa was probably mitigated by the fortuitous selection of people who showed a good protective mucous reaction. The absence of really significant signs of gastric irritation with soluble calcium aspirin is to be expected from clinical impressions of its bland nature.

Approximately one-third of a group of peptic ulcer patients whose histories were such that the possible aetiological factors for their current exacerbation of symptoms could be reasonably assessed, admitted to taking aspirin within 24 hours of their breakdown. Such an assessment is obviously fraught with difficulties, since even well-recognized damaging factors such as emotional tension, exposure to cold, irregular meals, etc., are often multiple. It was felt, however, that histories such as those recorded (Cases 1 and 2) admitted of no other interpretation, and, although these were particularly striking examples, 14 others were in a similar vein. The other 17 patients who admitted to taking aspirin immediately before the exacerbation of their ulcer symptoms gave no previous history of aspirin intolerance.

Chronic dyspepsia from the frequent taking of aspirin is not uncommon, and clinicians should remember that gastric haemorrhage does not necessarily negative this diagnosis. In our experience the majority of such patients were middle-aged women of neurotic disposition, chronic swallowers of headache powders in surprising numbers—a fact which they usually concealed to the bitter end. Most of them suspected the cause of their dyspepsia, but were either unable to give up the habit or derived some cogent benefit from it.

The most surprising result of this investigation was, of course, the large number of people who admitted taking aspirin within a few hours of their haematemesis. It must be stressed that this fact was never volunteered by the patient. The taking of aspirin has become so commonplace that it is admitted only if asked for directly.

Even if the 11 patients of this series who took aspirin regularly are completely eliminated, there still remain 43 patients out of a total of 166 in whom aspirin was strongly indicated as at least a precipitating factor in their haematemesis. Furthermore, if the second group—those patients who took aspirin relatively frequently—is also eliminated, and the fact that they each gave a history of aspirin intolerance is ignored, 21 patients still remain in whom, in our opinion, aspirin was undoubtedly the major factor in precipitating their haematemesis—that is, approximately 1 in every 8 haematemesis patients in this series.

Nine of these patients gave no previous history of dyspepsia—that is, one-fifth of the acute lesion group in this series. It is this type of aspirin haematemesis which has been published in the past as an interesting rarity—for example, Richmond (1950). Our finding suggests that it is not such a rarity as many people believe, and that it is a relatively common cause of gastric bleeding where there is no previous history of peptic ulceration.

Even in the presence of known peptic ulceration we believe that aspirin may be the precipitating cause of haematemesis, as it occurred in 12 patients at least in this series. This does not include a small group of 5 patients—of which Case 1 is a typical example—in whom a history indicated the likelihood of aspirin causing an exacerbation of ulcer symptoms eventually culminating in a haematemesis.

It is known that almost all patients with peptic ulcer have concomitant chronic gastritis of varying severity. It is not surprising, therefore, that a gastric irritant like aspirin exerts a maximum effect in ulcer patients, as we have shown from a study of their histories.

It is difficult to assess the site of a haemorrhage in this group—whether the bleeding is from an acute erosive gastritis induced by aspirin or from a chronic ulcer activated by it. We are of the opinion that bleeding was principally from a superimposed acute erosive gastritis, for the following reasons. Firstly, no presumed aspirin haematemesis was severe in this series. Of the 43 patients in this group only 3 required blood transfusion, the remainder responding rapidly to rest in bed, bland diet, sedatives, and alkali therapy (Cases 3, 4, 5, 6, and 7). If the bleeding had come from the chronic peptic ulcer known to be present in these patients, one would have expected at least a few to be more severe, although in so small a series no definite conclusion is possible. Secondly, the histories had a striking similarity, whether or not the patient suffered from peptic ulcer. Following aspirin, a variable latent period gave place to a bout of severe heartburn, culminating in the vomiting of blood, usually in small quantities, sometimes repeated, often fresh but occasionally altered.

For these reasons we had the tentative impression that aspirin haematemesis was, in the majority of patients, based on an acute erosive gastritis, whether or not peptic ulceration was also present. We found no evidence of defective blood coagulation or prothrombin content in any patient examined, thus excluding a salicylate-induced haemorrhagic diathesis as a contributory cause of the gastric bleeding.

The fact that aspirin did not play any possible part in an admittedly small series of peptic ulcer perforations also supported the gastritic origin of aspirin haematemesis. On the other hand, this finding is at variance with the clinical fact that aspirin may indeed cause an exacerbation of ulcer symptoms, as was previously shown.

In conclusion it is suggested that aspirin should never be given to patients with peptic ulceration, or indeed to those who have any gastric intolerance to it, however mild. Such an instruction should be given a prominent place in peptic ulcer advice charts, usually in place of much that could be safely left out. Some of these patients took aspirin on a full stomach only in powder form, with serious results, and, although this method almost certainly mitigates its irritant effects, it does not guarantee immunity. Calcium aspirin does not have this irritant action unless it has deteriorated through standing, and it can be used with impunity, especially if prescribed in soluble form. This simple measure would, in our opinion, cut down significantly the incidence of haematemesis and exacerbations of ulcer symptoms.

In a letter, Sir Arthur Hurst (1943) stated his belief that aspirin was the major cause of haematemesis in one-third of all cases in which peptic ulcer, gastric cancer, and cirrhosis of the liver could be excluded. He also estimated that aspirin haematemesis constituted 15 to 20% of all cases. The investigations here described support such an estimate, but a much larger series, preferably with selective gastroscopy, will be necessary to give a true indication of its frequency.

Summary

Aspirin is a serious gastric irritant, particularly in peptic ulcer patients.

It plays a significant part in exacerbation of ulcer symptoms and is at least a contributory cause in one in eight cases of haematemesis, and in one in five of that group with no major dyspeptic history.

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ACCIDENTAL HAEMORRHAGE

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During the past six years we have developed and maintained a special interest in accidental haemorrhage. In these years there have been 52,000 deliveries in the services of our two hospitals. Our investigations have included a study of the records of over 3,000 cases of accidental haemorrhage (including the necropsy findings in 100 cases) which were treated in the three Dublin Maternity Hospitals (Coombe, National Maternity, and Rotunda) over the period of 25 years from 1929 to 1953 inclusive.

A careful study of the case reports and statistics from Dublin and from other centres indicates that three complications render accidental haemorrhage one of the most serious happenings in present-day obstetrics. These complications are: (*a*) progressive and at times intractable haemorrhage, resulting from a deficiency in the clotting power of the blood: many of the hitherto imperfectly explained features of accidental haemorrhage are the natural results of this clotting defect; (*b*) anuric renal failure; and (*c*) foetal asphyxia. The foetal loss in all cases of accidental haemorrhage has been about 50%.

Deficiency in Clotting Power

We emphasize that the bleeding in a severe case of accidental haemorrhage is of a very special type. It is due to a fall in the level of the blood fibrinogen. Schneider has advanced an ingenious explanation of this occurrence. He has pointed out that the thromboplastin content of the decidua and placenta is very much higher than in most other tissues. When the placenta separates accidentally, the disparity in the diameters of the arterial sinusoids of the endometrium and those of the retroplacental haematoma is such as to lead to an expanding force, activated in a manner comparable to that of a hydraulic pump. The pressure within the haematoma becomes very great and, bursting, its admixed tissue and decidual juices are forced into the intervillous lake. The liberation of thromboplastin in this way initiates coagulation. Thrombin is produced and the circulating fibrinogen is thereupon converted into fibrin. In our opinion, most of the fibrin formed in this way is deposited in the great vascular bed of the pregnant uterus.

At a certain level of falling blood fibrinogen (200 mg. per 100 ml.) haemorrhages are likely to occur. Liver replacement, which may take from 12 to 24 hours, fails to keep pace with fibrinogen conversion, so that hypofibrinogenaemia results, with the onset of widespread haemorrhages, occurring spontaneously or induced by trauma. The uterus is not paralysed and incapable of contracting, but clotting power is lost. In spite of massage, oxytocic substances, contraction and retraction, blood transfusion, uterine plugs, and hysterectomy, haemorrhage continues from every traumatized point in the genital tract until death occurs or the clotting defect is corrected. If blood should lose its clotting power after premature separation of the placenta, more and more blood is poured out behind the detached placenta to overstretch the uterus. Shock is thereby induced from simple blood loss and from distension of the organ. The non-clotting blood can infiltrate between the uterine muscle fibres and escape into the broad ligaments and into and behind the peritoneal cavity. Thus there is still more shock from further blood loss and from tissue trauma and haematoma formation. The Couvelaire uterus might well be described as a diffuse haematoma of the uterus.

Once the maternal blood escapes without clotting, each tiny vascular breach will open wider, because it is not sealed off in the ordinary way. The stage is thereby set for the well-known clinical features of severe accidental haemorrhage: the tense, tender, Couvelaire uterus; the retroplacental and intraligamentous collections of blood; the haemorrhages under the capsule of the liver; the death undelivered; the death from intractable post-partum haemorrhage in spite of exploration, plugging, replugging, or hysterectomy; the death following caesarean section or caesarean hysterectomy. We believe that there is no unusual element of shock in these disasters. The patient dies from haemorrhage which is occurring not only from her genital tract, but into and about her abdominal organs, especially at the site of trauma, no matter how slight. The major loss may not be external. The condition is directly due to fibrinogenopenia, resulting from the absorption into the circulation of thromboplastin.

This clotting defect is to be found in the majority if not in all cases of combined and concealed accidental haemorrhage. Once it develops, bleeding must continue until the clotting power of the blood has been restored to normal. Serious loss of blood from the circulation is a constant feature of these cases. In a recent letter (to J. K. F.) Fletcher Shaw wrote: "I believe that hypofibrinogenaemia gives me the answer, which I have so long desired, to a remarkable series of 11 cases of accidental haemorrhage treated 40 years ago by Clifford and myself in St. Mary's Hospital, Manchester. In all cases the uterus was markedly discoloured. One or both broad ligaments contained large effusions of blood which extended upwards to the lower pole of the kidney in two instances. One uterus showed minute cracks exuding blood like the splitting of a ripe plum. The pelves were filled by liquid blood. I can still visualize the dreadful picture as clearly as when I opened the abdomen. Five of the 11 cases survived caesarean hysterectomy. I came to the conclusion that the poor nutrition of wartime was a factor." Malnutrition and anaemia are indeed important associated conditions.

Since the amount of blood-coagulation substances in transfused fresh or citrated blood is relatively small (each pint of transfused blood has a fibrinogen content of about

200 mg. per 100 ml.), transfusion can be effective only if given early and generously before marked defibrination of blood yields about 1 g. of fibrinogen, but when a rapid prior to or early in the development of this progressive condition. It should be accompanied by early puncture of the membranes and adequate drainage of the liquor in an attempt to reduce thromboplastin absorption and uterine distension. This step should be carried out at the onset of treatment. The best laboratory methods to determine the presence of fibrinogenopenia are the Schneider and the Shea tests, both of which may be easily performed in any small clinical laboratory. The Schneider test can be done within 15 to 20 minutes. The Shea test, after 45 minutes, gives a sufficiently accurate figure for plasma fibrinogen. The Lee and White clotting test, although useful in severe cases, does not detect minor degrees of the condition.

On clinical grounds, we believe that fibrinogenopenia can be assumed to be present if the uterus is tender. The uterus becomes tender when blood is infiltrating between its muscle fibres. This does not occur unless the coagulation defect is already established. A severe degree of fibrinogenopenia can be reversed only by the intravenous administration of pure fibrinogen or of plasma solids. One pint (568 ml.) of transfused blood yields about 1 g. of fibrinogen, but when a rapid coagulation effect is essential, pure human fibrinogen (4 to 6 g.) or total plasma solids (80 to 120 g.) should be administered intravenously. 18 g. of plasma solids, a single dose as supplied by our National Blood Transfusion Association, contains just under 1 g. of fibrinogen.

To attempt to overcome severe fibrinogenopenia by transfusion alone may lead to the situation so ably described by Kellogg (1948) when referring to the treatment of severe cases of accidental haemorrhage: "This has on occasions led to the unpleasant situation in which more and more foreign blood has been given to a patient only to be washed out in what remains of the patient's own blood, her condition being such that one did not dare to stop the transfusion."

Anuric Renal Failure

O'Driscoll and Quinn (1951) studied maternal mortality in Dublin in the decade 1940–9. During these years, as a result of improvement in the treatment of haemorrhage, the incidence of death from renal failure increased. Of 32 mothers who died of accidental haemorrhage, 15 survived the acute phase but succumbed to anuric renal failure. Transfusion and restorative treatment will save patients, but they must be rescued from the anuria which may follow. This is caused by renal vasospasm, which has been so ably investigated by Sheehan and Moore (1952).

The utero-renal reflex of Sophian, combined with the haemex effect of Franklin, adequately explains the intense vasospasm which frequently occurs. In every case of accidental haemorrhage, renal output must be recorded accurately, and if it falls below the arbitrary figure of 1 oz. (28 ml.) an hour, steps must be immediately taken to cause relaxation of the renal vasospasm. These consist of energetic treatment of the shock by the administration of morphine and blood transfusions, immediate puncture of the membranes and drainage of the liquor in order to abolish the utero-renal reflex and to diminish the absorption of thromboplastin, and the performance of renal pelvic nerve block. The beneficial effect of block has been demonstrated by the insertion of ureteric catheters immediately before its performance.

If the anuria should persist after the block and if delivery should not be imminent, lower-segment caesarean section under local analgesia should be performed. If treatment has not been carried out in good time and if renal failure continues into the puerperium, the management of the case should be according to the method advocated by Bull *et al.* (1949). When advanced cortical necrosis has already occurred, this regime will not prove successful. If due consideration is paid to these two factors—that is, the clotting defect and the anuric renal failure—the following treatment for accidental haemorrhage should be carried out. There has been no maternal mortality in 600 consecutive cases of accidental haemorrhage treated on these lines in our two hospitals.

All cases may be classified as mild, moderate, or severe.

Mild Cases

Mild cases are those with no symptoms or signs apart from slight vaginal bleeding, with or without an associated toxaemia. In general, they require no special treatment other than bed rest, sedation, and attention to the toxaemia if present. If the bleeding should continue or recur, the membranes should be punctured. There are many cases on record of mild accidental haemorrhage with temporary recovery and discharge from hospital, but with the onset of grave concealed and sometimes even fatal haemorrhage at a later date. If an associated toxaemia is present in these mild cases and if it does not clear up at once, the pregnancy should be terminated because of the danger of recurring haemorrhage and worsening toxaemia. In some mild cases, factors such as elderly first pregnancy, foetal distress, recurrent bleeding, exacerbation of toxaemia, etc., may indicate caesarean section. There are no dangers in the mild case other than those of actual blood loss, which can be seen and restored if necessary, and the possibility that the case, if not treated promptly, may pass into the next group. Early puncture of the membranes will avoid this misfortune. The only way to reduce foetal mortality in accidental haemorrhage is by energetic treatment of all mild cases. There is a tendency to underestimate their significance.

Moderate Cases

Moderate cases are those showing some shock or moderate external loss and some internal bleeding, as indicated by hypertonicity of the uterus and abdominal tenderness. As we have already pointed out, we believe that abdominal tenderness indicates some degree of clotting defect. The Schneider and Shea tests should be done. Such cases should be treated by immediate puncture of the membranes and drainage of the liquor, combined with blood transfusion of two or more pints (1 litre or over). Labour should be stimulated by the administration of pitocin, because early delivery plays a very important part in the prevention of the complications already mentioned. Both renal and blood complications depend to a great extent upon the length of time which elapses between the collection of blood beneath the placental site and delivery. We recommend the use of pitocin in these cases in spite of experimental animal evidence that it leads to vascular constriction. A catheter must be inserted at once and constant observation of the urinary output maintained. Clotting-time should be observed from hour to hour. If progress is not rapid, or if the complication of clotting defect or suppression of urine should ensue, treatment should be carried out as recommended for the severe case and lower-segment section performed, if delivery is not imminent. Even with great care, an occasional case may pass into the severe group, or, as not infrequently happens, the patient is admitted already in this category.

Severe Cases

Severe cases are those exhibiting shock and a tender distended uterus of board-like consistency together with an absence of foetal heart sounds. The maternal deaths occur in this group. Such patients should receive a sedative in order to allay apprehension and to ease pain—morphine, ¼ gr. (16 mg.). A rubber catheter must be placed in the bladder and renal secretion recorded. The simple clot-observation and Schneider tests should be performed at hourly intervals. Blood transfusion of at least 3 pints (1.7 litres) should be administered. Blood provides fibrinogen, relieves shock, improves the circulation to organs such as the kidney and myocardium, and helps to counteract pre-existing anaemia. The transfusion should be rapid, as restoration of renal blood flow lags considerably behind the re-establishment of normal blood pressure and cardiac output. This is explained by the nature of the utero-renal reflex and of the haemex effect. The membranes must be

punctured as soon as possible so as to reduce intra-amniotic and retroplacental tension. This is one of the most important steps in treatment and should never be neglected, even though the patient may still be in a state of shock and the uterus still inactive. It helps to reduce shock, to restore renal secretion, to stimulate uterine contractions, and to delay or prevent the further absorption of thromboplastin. If the clotting defect has not been controlled by brisk transfusion, pure fibrinogen in a dose of 4 to 6 g., or plasma solids, 72 to 108 g., must be given intravenously.

The best clinical evidence of control of the clotting defect is an improvement in the general condition of the patient and the absence of increasing uterine distension and intrauterine tension. If urinary secretion does not rapidly return to an amount of at least 1 oz. (28 ml.) an hour, bilateral splanchnic block should be performed without delay. Indeed, when the systolic blood pressure has reached 100, block should be carried out at once if the kidneys are not secreting as noted. If haemorrhage has been controlled, if the patient's general condition is improving, and if the kidneys are secreting not less than 1 oz. (28 ml.) an hour, vaginal delivery may be awaited and its advent may be hastened by the administration of pitocin. If, however, bleeding continues or begins again, as evidenced by worsening of the patient's general condition, by an increase in the size of the uterus, or by a fall in blood pressure, or if the kidneys have failed to respond to block, then the uterus should be emptied immediately by lower-segment caesarean section, under local or expertly administered general anaesthesia. The administration of fibrinogen or plasma solids should be continued during the operation in order to prevent free loss from all traumatized points. There is no necessity to remove the uterus, no matter how black and damaged it may be. Post-partum haemorrhage will not occur if the clotting defect has been corrected. As already stated, if oliguria or anuria persists after delivery, the management should be by Bull's method. If one is aware of the possibility of renal vasospasm, and if one treats the condition adequately before delivery, Bull's regime should be rarely required.

Technique of Splanchnic Nerve Block

The patient is placed sitting upright with her legs over the side of the bed. This is the most suitable position for easy insertion of the needles and is reasonably comfortable for the woman suffering from accidental haemorrhage with its associated abdominal pain. Four long needles, 12 to 16 cm., are selected. After sterile preparation the following sites are marked out with skin blebs of local analgesia without hyaluronidase : two points on each side, 8 cm. (3½ in.) lateral to the level of the twelfth thoracic and first lumbar spines. The lower points lie just below the outer end of the twelfth rib. The long needles are directed inwards at an angle of 45 degrees and slightly upwards in order to strike the antero-lateral aspect of the vertebral body. It is better to direct the upper needles slightly upwards, instead of straight in, as in the usual paravertebral injection. When the tip of the needle strikes the antero-lateral aspect of the vertebral body it should be withdrawn slightly and the direction changed in order to allow the point of the needle to pass round the maximum circumference of the vertebral body. When the tip of each needle finally passes clear of the vertebral body, it should be introduced about a centimetre further forwards, when it will be in the correct position. At this stage, in a patient of average girth and bulk, a 16-cm. needle will be at a depth of almost 12 or 13 cm. Careful aspiration for blood and cerebrospinal fluid must be carried out before injection is begun. When the four needles are placed in position, each site should be injected with 20 ml. of 1% procaine containing 1,000 Berger units of hyalase per 100 ml. of solution.

Schneider Method for the Rapid Assay of Plasma Fibrinogen

Schneider (1952a) has devised a method for the rapid assay of plasma fibrinogen. We have used the test extensively, and find it useful in the detection of degrees of fibrinogen depletion which are insufficient to disturb the coagulation time of whole blood. Essentially, the method consists in making a serial dilution of the patient's blood in a diluent such as Ringer's solution (which will act as a source of calcium ions), adding preformed thrombin, and observing the highest dilution in which a discernible fibrin coagulum appears. For details of the technique the reader is referred to Schneider's original description.

Rapid Fibrinogen Estimation (Shea)

The following is an account of the practical details of this biuret method for fibrinogen estimation.

Reagent:

Sodium potassium tartrate ..	9 g.
$CuSO_4.5H_2O$	3 g.
Potassium iodide	5 g.
0.1N NaOH	to 1 litre
Distilled water	to 1.9 litres

Thrombin Solution:

P. D. & Co. "thrombin topical" in 50% glycerol-saline.

Procedure.—Take blood in the Heller–Paul (Wintrobe) oxalate mixture. If possible, secure 3 ml. of plasma. Add 20 units of thrombin per ml. of plasma. Clotting should occur within 5 seconds, and rapidly even at 5° C. Provided that the plasma clots within 60 seconds, upwards of 97% of the fibrinogen will be precipitated in one hour, even if clotting occurs and is allowed to continue at a temperature as low as 5° C. After one hour at 5° C. or 37° C., the clot is spilled out on to a filter paper, or a paper towel (preferable), and the plasma expressed in three or more stages. The clot is washed in distilled water, and the fluid again expressed. The clot is then transferred to a boiling tube containing 0.5 ml. of N NaOH, and dissolved by heating in a boiling-water bath for two to three minutes. Then 9.5 ml. of the biuret reagent is added and the colour developed by heating in a water bath at 30 to 32° C. for 30 minutes. A reagent blank is prepared by the addition of 9.5 ml. of the reagent to 0.5 ml. of N NaOH, with similar incubation at 30° C. for 30 minutes. The optical density of the test is read against the reagent blank in a photoelectric colorimeter at 555 mμ, each tube being at about 30° C. The instrument is calibrated by duplicate estimations by the Kjeldahl method. The reagent described gives a colour which follows Beer's law.

Statistical Notes

The following is a summary of the statistics relating to accidental haemorrhage in Dublin during the 25-year period under review.

1. In that period 288,412 women were delivered in the service of Coombe, National Maternity, and Rotunda hospitals. There were 3,256 cases of accidental haemorrhage (1.1% of all deliveries) and 106 maternal deaths, a case mortality of 3.3%.

2. As an indication of the general trend: in the five-year period 1929 to 1933 inclusive, 42,639 women were delivered, with 369 cases of accidental haemorrhage (0.9%) and 23 deaths (6.2%); in the five-year period 1949–53 inclusive, the number of deliveries had increased to 71,171, with 1.8% of the patients suffering from accidental haemorrhage, and a case mortality of 1.2%. Note the increasing number of deliveries in the service of the three hospitals, representing an advance of 70% between the first and the fifth five-year period. Over 20 years the actual number of cases of accidental haemorrhage treated in the hospitals increased fourfold and the percentage of patients treated for accidental haemorrhage twofold. This does not indicate that accidental haemorrhage has become more common, but that doctors in practice are sending into hospital their antepartum haemorrhage cases, including the mild ones. Note, too, that mortality in the last period was only one-fifth of that in the first period. From 1939, earlier admission to hospital, more effective replacement of fluid loss and alleviation of shock by glucose and blood rather than by saline, early puncture of the membranes, and the judicious employment of caesarean section all helped to reduce mortality.

3. The 106 maternal deaths which occurred in the 25-year period were studied as carefully as the case records permitted. It was considered that haemorrhage (before delivery, during caesarean section or caesarean hysterectomy, or early in the post-partum period) was responsible for one-half of the deaths; renal failure for one-quarter; and other causes, including eclampsia, puerperal infection, and apoplexy, for the remaining quarter. In a noteworthy proportion of the haemorrhage cases it was stated that the blood which had escaped per vaginam failed to clot or that non-clotting blood was found in the wall of the uterus, in the peritoneal cavity, between the layers of the broad ligament, or behind the peritoneum. Although shock was stated to have occurred in many of the fatal cases, it is obvious, in the light of recent knowledge, that haemorrhage was the most important factor in the causation of this condition.

4. Age in relation to maternal death.—Under 20 years, 1; 20 to 24, 3; 25 to 29, 19; 30 to 34, 27; 35 to 39, 37; 40 and over, 19.

5. Parity in the fatal cases.—Primigravidae, 19; multiparae 2 to 5 inclusive, 28; multiparae 6 to 9 inclusive, 33; tenth and later pregnancy, 26.

6. Fate of the foetus.—3,310 cases yielded 3,256 foetuses. The fate of 3,271 was noted in the records: 1,445 stillbirths and 176 neonatal deaths. The foetal loss, then, was 1,621 in 3,271, or just 50%. The loss in severe accidental haemorrhage was 100%.

Summary

Haemorrhage, renal failure, and foetal asphyxia render accidental haemorrhage a serious or potentially serious condition.

In the severe case of accidental haemorrhage the bleeding is of a special type—that is, due to a fall in blood fibrinogen. The clinical manifestations of this clotting defect are described.

The pathogenesis of anuric renal failure is presented in brief.

A scheme of treatment for the mild, moderate, and severe case of accidental haemorrhage is suggested. In Dublin, over the past two years, the results of this treatment have been most encouraging.

Notes relating to splanchnic block and to the Schneider and Shea tests for fibrinogen deficiency are included.

A summary of the statistics of accidental haemorrhage in Dublin over the 25-year period 1929–53 is presented.

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THE NATURE AND SOME HAZARDS OF OBSTETRICS IN GENERAL PRACTICE

BY

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Few details have been published of the midwifery of general practitioners. For information concerning its nature and results I analysed the records for seventeen years (1935–51) of a group practice. Although five partners dealt with most of the abnormal cases, altogether eight principals and four assistants were concerned in the obstetrics.

Nature of the Work

Quantity of Midwifery.—During the seventeen years 2,911 confinements were attended (this figure ignores attendances made solely to suture perineal tears)—2,241 were "booked" cases, the patients having engaged us to attend, and 670 were "emergency" ones, which we attended in response to requests from midwives.

Ratio of Booked to Emergency Cases.—Before 1948 two-thirds of the confinements were booked and one-third emergency, but since the financial obstacle to engaging a doctor was removed that year by the National Health Service our booked cases have been doubled and the emergencies decimated. The ratio of booked to emergency cases is now 50 to 1. The total midwifery undertaken now corresponds to 16 confinements per 1,000 patients.

Parity of Cases.—The mothers in the analysis were divided into three classes—primiparae, secundiparae, and "other" multiparae. Ordinarily, secundiparae are included with other multiparae, but, though they may behave similarly, they are not "mothers of many children." The analysis provided an opportunity of comparing secundiparae with "other" multiparae. The analysis showed that, excluding a few cases in which parity was not recorded, 48.5% of the booked cases and 71.9% of the emergencies were primiparae. Secundiparae (14.0%) and other multiparae (14.1%) contributed equally to the emergency total, but more mothers booked a doctor for their second confinements than for subsequent ones (Table I).

TABLE I

	Primiparae	Secundiparae	Other Multiparae
Booked cases (2,241) ..	48·5%	34·7%	16·8%
Emergency cases (670) ..	71·9%	14·0%	14·1%

Parity and Abnormality.—By taking "normal" to mean a spontaneous vertex delivery of a live baby, with no haemorrhage or other intrapartum complication, and recording as "abnormal" all deliveries not satisfying these criteria, it was found that primiparous confinements were abnormal more than twice as often as multiparous ones (Table II). Abnormal labour occurred among the booked patients in

TABLE II.—*Percentage of Normals in 2,241 Booked Cases*

	Primigravidae	Secundiparae	Other Multiparae
Normal with no perineal tear	49·7%	68·9%	76·9%
Normal but with tear or episiotomy	23·2%	19·2%	11·0%
Total normal ..	72·9%	88·1%	87·9%

27.1% of 1,086 primiparae, in 11.9% of 764 secundiparae, and in 12.1% of 391 other multiparae. Of 432 abnormal booked cases, 294 (68.1%) were primiparae. If episiotomies and tears are counted as abnormal, then 50.3% of booked primiparae showed some abnormality.

Frequency of Abnormalities in 2,241 Booked Cases.—Breech deliveries occurred as often in booked primiparae (3.7%) as in secundiparae (3.5%), but the incidence of forceps differed greatly with parity. The forceps incidence was 17.4% in booked primiparae, 3.5% in secundiparae, and 2% in other multiparae (Table III). Of 107 secundiparae who had been delivered at their first confinement with forceps, only eight (7.2%) required forceps at the second delivery. Since the size and shape of the pelvis are virtually constant, this suggests that the cause for needing forceps in the first confinement was in over 90% of cases not attributable to an abnormal bony pelvis. Shoulder presentation was encountered in 0.72% of other multiparae, but more rarely in primiparae and secundiparae. Face presentations were met in 0.46% of primiparae and 0.13% of secundiparae, but did not occur in other multiparae. There were no triplets. The incidence of twins in secundiparae (1 in 50) was higher than in primiparae (1 in 90) or in other multiparae (1 in 80).

TABLE III.—*Comparative Frequency of Abnormalities in* 2,241 *Booked Cases*

	Primiparae	Secundiparae	Other Multiparae
No. of cases	1,086	764	391
Forceps deliveries	17·4%	3·5%	2·0%
Breech ,,	3·7%	3·5%	2·6%
Shoulder presentations	0·28%	0·13%	0·72%
Face presentations	0·46%	0·13%	Nil
Caesarean sections	1·4%	0·65%	1·0%
Transferred to hospital	2·85%	2·1%	2·05%
Frequency of eclampsia	1 in 217	None	None
,, (approx.) of foetal abnormality:			
Twins	1 in 90	1 in 50	1 in 80
Hydrocephaly	1 ,, 540	1 ,, 380	None
Anencephaly	1 ,, 220	1 ,, 255	1 in 200

Indications for Forceps

To determine why the need for forceps was so much greater in primiparae than in multiparae, I investigated the various indications for intervention in 575 booked and emergency forceps deliveries.

Several indications may exist in one case—for example, a prolapsed cord and foetal distress, complicating an occipito-posterior position with a contracted pelvis—so that it is difficult, if not impossible, to ensure that the indications were always tabulated under the correct heading. The indications were placed under five headings. These were: (1) uterine inertia and/or rigid perineum; (2) occipito-posterior positions (right, left, or persistent); (3) transverse arrest of the head; (4) disproportion (narrow outlet, contracted pelvis, large baby); and (5) distress or disease (a miscellaneous group including maternal exhaustion, eclampsia, cardiac disease, and foetal distress when not secondary to or accompanied by malpresentation or disproportion) (Table IV).

TABLE IV.—*Indications for Forceps in* 575 *Cases*

	No. of Cases	Inertia or Rigid Perineum	Occipito-posterior	Transverse Arrest	Dispro-portion	Distress or Disease
Primiparae	473	48·8%	24·1%	12·1%	9·3%	5·7%
Secundiparae	56	34·0%	44·6%	3·6%	10·7%	7·1%
Other multiparae	46	23·9%	47·8%	8·7%	15·2%	4·3%

The outstanding discovery from this analysis of indications was that inertia and/or rigid perineum accounted for 48.8% of primiparous forceps deliveries, for 34% of those in secundiparae, and for only 23.9% of those in other multiparae. Taking these figures in conjunction with those (already given) for incidence of forceps in primiparae (17.4%), in secundiparae (3.5%), and in other multiparae (2.0%), inertia and perineal rigidity were responsible for forceps being used in 8.6% of all booked primiparae, in 1.1% of secundiparae, and in 0.48% of other multiparae.

But inertia was also recorded, and often contributed to the need for forceps, in many cases that were grouped under the headings of malpresentation, disproportion, and foetal distress. It is therefore clear that inertia and rigid perineum together explain the higher incidence of forceps in primiparae and probably also the higher incidence of abnormal labour in primiparae. Uterine inertia is the primigravida's greatest enemy.

Declining Use of Forceps

If an effective and safe alternative method of dealing with uterine inertia had been available, a large number of the forceps deliveries might have been rendered unnecessary. But since about 1948, when the National Health Service was introduced, it has struck me that the frequency and difficulty of forceps deliveries have been diminishing—and this despite a sharp increase in the total amount of midwifery undertaken. Other doctors and midwives have had the same impression, and in his recently published survey of general practice Stephen Taylor (1954) stated that "in manipulative obstetrics . . . the need for intervention is declining."

To confirm the correctness of this impression, I calculated the incidence of forceps and caesarean section in our practice for the last nineteen years. The years were divided into five periods: (1) "pre-war" (1935–9), (2) "wartime" (1940–4), (3) "post-war–pre-N.H.S." (1945–June, 1948), (4) "early N.H.S." (July, 1948–1951), (5) "later N.H.S." (1952–3).

In every period the total forceps rate rose or fell in agreement with the rate for primiparous forceps deliveries. These two rates declined during the war, increased in the post-war period, subsided after the N.H.S. was introduced, and continue to decrease. The total forceps incidence has dropped from 8.4% in the "post-war–pre-N.H.S." period to 4.1% in 1952–3, and the primiparous rate for the same periods has fallen from 20.1 to 9.7% (Table V).

TABLE V.—*Incidence in Forceps in* 2,710 *Booked Cases*

	Primiparae			Secundiparae			Other Multiparae			Total		
	No.	For-ceps	%	No.	For-ceps	%	No.	For-ceps	%	No.	For-ceps	%
1935–9	220	47	21·4	122	8	6·6	48	3	6·3	390	58	14·9
1940–4	322	50	15·5	166	4	2·4	67	2	3·0	555	56	10·1
1945–June, 1948	214	43	20·1	177	10	5·65	299	5	1·7	690	58	8·4
July, 1948–1951	330	49	14·8	299	5	1·7	202	3	1·9	831	57	6·9
1952–3	155	15	9·7	150	4	2·7	164	0	—	469	19	4·1

Explanations for Declining Forceps

An increase in caesarean sections would reduce the number and difficulty of forceps cases, but the latest figures show a decrease: 1935–9, 0.5% of 390; 1940–4, 1.9% of 555; 1945–June, 1948, 0.5% of 455; July, 1948–1951, 2.1% of 831; 1952–3, 0.6% of 469. Only three mothers had caesarean sections in the last two years—two for placenta praevia and one for severe toxaemia—none for dystocia.

The relative increase in the number of bookings of the less forceps-prone secundiparae and other multiparae would lead to a fall in the total forceps rate, but it leaves unexplained the decline in primiparous forceps deliveries. Incidentally the number of our secundiparous patients (150) in the last two years nearly equalled the total of primiparae (155): this "shift to the right" might herald a decline in the post-war marriage and baby boom.

A more conservative attitude on the part of the obstetrician could explain a reduction in forceps cases, but we have not altered our attitude, have never held that primiparity *per se*

was a good indication for intervention, and the decline in the use of forceps is not limited to our cases, but is general.

Shortening of labour resulting from quicker dilatation with pethidine, and the relief of suffering afforded by nitrous oxide and pethidine, lessen maternal distress. In so far as distress is responsible for the use of forceps—only a small percentage of the indications (Table IV)—analgesics may have contributed to the decline.

Better antenatal care, correction of malpresentations before labour, and induction of labour before the baby becomes excessively large—these could explain some cases, but our medical and surgical inductions have been much fewer in the last four years than they were during the post-war period.

The disappearance of rickets and increased rate of growth of the younger generation, assisted by supplements of milk, vitamins, and the school-meal service, suggest possible improvement in development of the pelvis of those who are now becoming mothers. A larger pelvis should mean a less difficult labour, but the low rate of recurrent forceps (7.2%) and the figures for disproportion (Table IV) suggest that a small pelvis explains only a minority of forceps deliveries.

The main reason, however, for the decline seems to be the increasing youth of primiparae.

Maternal Age

The ages of the booked primiparae were calculated for the five periods used in investigating the decline in forceps. Mothers were divided into six age groups (Table VI). Before the war only 23% of the booked primigravidae were under 25; this proportion increased to 34.5% in the post-war period, and by 1952–3 it had reached 60.4% (Table VI). The youngest primiparae, those under 20, increased from 3.8% in the post-war period to 14.8% in 1952–3.

TABLE VI.—*Age of Booked Primiparae*

	Under 20	20–24	25–29	30–34	35–39	40 and Over
1935–9	2·3%	20·7%	43·1%	25·0%	7·1%	1·8%
1940–4	1·6%	29·7%	38·4%	20·0%	10·0%	0·3%
1945–June, 1948 ..	3·8%	30·7%	36·8%	15·1%	12·7%	0·9%
July, 1948–1951 ..	9·5%	47·9%	24·8%	11·4%	4·9%	1·5%
1952–3	14·8%	45·6%	26·6%	9·7%	3·3%	—

Forceps Incidence and Maternal Age

The influence of age on parturition is perceptible throughout child-bearing years (Table VII). The incidence of forceps rises progressively with advancing age, so that, compared with the forceps rate in primiparae under 20 (6%), the rate is six times greater (35.5%) in those aged 35–39 and nine times greater (54.5%) in those aged 40 and over.

TABLE VII.—*Percentage of Forceps Deliveries in Different Age Groups*

	Under 20	20–24	25–29	30–34	35–39	40 and Over
Primiparous forceps	6%	10·3%	17·0%	25·2%	35·5%	54·5%
Secundiparous forceps	—	1·5%	1·8%	5·5%	7·7%	—

The rate also increases with age in secundiparae, but at a lower level, the rate for secundiparae aged 35–39 (7.7%) being little higher than the rate for the youngest group of primiparae.

The Maternal Risk

Since abnormal midwifery is commonest in primiparae, especially elderly ones, most maternal deaths might be expected to occur in primigravidae. But we have had no maternal deaths among 1,241 booked primiparae, nor among 555 booked other multiparae, including mothers who were transferred to hospital. The only two booked cases in which the mothers died were among the 914 secundiparae, and one of these died from a non-obstetric cause. This was a mother who in 1935 (before the days of sulphapyridine or penicillin) developed a temperature on the sixth day after delivery, was transferred to hospital with pneumonia, and died on the seventeenth day. The other death occurred in 1943, when a mother in a nursing-home died apparently from obstetric shock. The maternal mortality rate for our booked cases between 1935 and 1953 was 0.007% (2 out of 2,710).

Among the 670 emergency cases there were five maternal deaths, three of them occurring before the last war, when the standard of antenatal care was lower and unqualified midwives were numerous.

The first of these deaths, in a nursing-home in 1936, was that of a 4-para aged 35, who weighed 23 stone (137 kg.); the baby's head was still above the brim when she was fully dilated; internal version was performed and she was delivered, as a breech, of a 10½-lb. (4.9-kg.) baby. Two and a half hours later she collapsed and failed to rally. She was thought to have died from pulmonary embolism.

The second fatality, in 1937, occurred ten minutes after the doctor arrived at the house. The cause was post-partum haemorrhage complicating a retained placenta. Her parity was not recorded, but she was said to have been very anaemic during pregnancy.

The third victim, in 1938 (parity not recorded), was confined at home and had a 13-lb. (5.9-kg.) baby. The midwife delivered the head, but was unable to deliver the shoulders. One and a half hours elapsed before the doctor arrived and completed the delivery. Two hours afterwards the mother collapsed, and she died after a further ninety minutes. Death was attributed to a pulmonary embolism.

The fourth death was in 1941. A 3-para in a nursing-home had a normal delivery but collapsed and died five hours later. When first seen by the doctor she was moribund. Post-mortem examination showed death to have resulted from pulmonary embolism secondary to femoral thrombosis.

Lastly, in 1948, a 35-year-old primipara, in a nursing-home, collapsed thirty hours after delivery and was transferred to hospital but died shortly afterwards. The hospital pathologist performed necropsy and attributed death to fulminating septicaemia. We were not convinced of the correctness of this diagnosis, and it was suggested by Professor Chassar Moir that the collapse may have been due to multiple small emboli of amniotic fluid debris entering the maternal circulation via the placental sinuses—a syndrome described by Steiner and Lushbaugh (1941) in America.

One feels that with better antenatal care the first three of these deaths could have been prevented, but, since more deaths occurred among the unbooked mothers than among the booked ones, search was made to see if the loss of babies was, like that of mothers, greater in emergency cases than in the booked.

The Foetal Risk

Booked and Emergency Foetal Loss

The comparative foetal loss was ascertained for booked and emergency forceps and breech deliveries over a period of fifteen years (1935–49). By 1950 the booked cases had increased, and the emergencies decreased, so much that they had become too unequal to justify comparison. The years 1950–1 were therefore excluded from the calculation.

TABLE VIII.—*Corrected Stillbirths and Neonatal Deaths Among 545 Booked and Emergency Forceps Deliveries*

	1935–9	1940–4	1945–9	1935–49
Booked forceps ..	7%	1·7%	1·2%	3·0%
Babies lost ..	(4 out of 57)	(1 out of 58)	(1 out of 82)	(6 out of 197)
Emergency forceps	9·3%	4·8%	7·9%	7·2%
Babies lost ..	(10 out of 108)	(6 out of 126)	(9 out of 114)	(25 out of 348)

Forceps Deliveries.—There was a steady and progressive decline in the foetal loss of the booked cases during the fifteen years: only two babies were lost out of the last 140 booked forceps deliveries. This improvement may be further evidence of easier deliveries and stronger babies. The foetal loss for the booked forceps cases (3%) was less than half that for the emergency forceps deliveries (7.2%) for the whole period (Table VIII).

Breech Deliveries.—Four babies were lost out of 58 booked breech deliveries—only two were stillborn, the other two being premature babies who died when a few days old. The uncorrected foetal loss for booked breech deliveries (6.9%) was considerably less than half the loss for emergency breech cases (18.2%) (Table IX).

TABLE IX.—*Corrected Stillbirths and Neonatal Deaths Among* 146 *Booked and Emergency Breech Deliveries*

	1935-9	1940-4	1945-9	1935-49
Booked breech .. Babies lost ..	5·3% (1 out of 19)	10·0% (2 out of 20)	5·3% (1 out of 19)	6·9% (4 out of 58)
Emergency breech Babies lost ..	31·8% (7 out of 22)	12·8% (5 out of 39)	14·8% (4 out of 27)	18·2% (16 out of 88)

Wartime Emergency Foetal Loss

During the war expectant mothers residing in heavily bombed areas were removed for their confinements to emergency maternity units in safer regions. Many London mothers came to one of these units, the Grove, on the outskirts of Reading. They were brought to Reading about the thirty-sixth week of pregnancy and stayed in hostels until the confinements took place. Although we attended their confinements only in response to requests from midwives, these cases differed from other emergencies because during the last weeks we attended to their antenatal examinations, arranging for medical inductions or performing surgical inductions when necessary. In this respect they resembled booked cases. It is noteworthy that our loss of babies for emergency forceps and emergency breech deliveries was lowest during the war, when we were attending the Grove cases, who comprised 57% of our war emergencies.

Foetal Loss in Breech Deliveries

Although a breech extraction may be difficult more often in primiparae than in multiparae, our figures show that the breech foetal loss was much lower (9.1%) in primiparae than in multiparae (18.2%) (Table X). In the latter we were sometimes called too late to save the baby.

TABLE X.—*Corrected Stillbirths and Neonatal Deaths in* 135 *Booked and Emergency Breech Deliveries of Known Parity*

	Primiparae	Secundiparae	Other Multiparae
Foetal loss	9·1% (7 out of 77)	16·7% (6 out of 36)	18·2% (4 out of 22)

Foetal Loss in Domiciliary and Nursing-home Confinements

The proportion of women confined in nursing-homes who were primiparae was greater than in domiciliary confinements, so for fair comparison the foetal loss was estimated only for primiparae. The uncorrected loss among 1,071 babies born to booked primigravidae (including twins, but excluding the babies of 27 primiparae who were transferred to hospital) was twice as great (5.7%) in domiciliary cases as in nursing-home ones (2.5%) (Table XI).

TABLE XI.—*Uncorrected Stillbirths and Neonatal Deaths Among* 1,071 *Babies Born to* 1,059 *Booked Primiparae*

	Domiciliary	Nursing-Home
Foetal loss	5·7% (15 out of 263)	2·5% (20 out of 808)

Discussion

Maternal mortality, stillbirths, and neonatal deaths in this country have diminished since the introduction of the National Health Service. The plan whereby normal midwifery is conducted by midwives, and abnormal midwifery is dealt with in hospitals by specialists, with general practitioners acting as intermediary, appears to be satisfactory. This discussion suggests ways of further lessening certain hazards.

Risk of an Inexperienced Obstetrician

A single practitioner with 3,000 patients would, at a birth rate of 16 per 1,000, conduct 48 confinements each year. The number of abnormal ones would depend mainly on parity and maternal age: the fewer primiparae, the fewer abnormal. But fewer abnormal cases would mean less experience. The latest figures suggest he would have yearly only four or five forceps and one or two breech deliveries; skill is acquired only with practice, and experience in abnormal midwifery is obtained only after qualifying. An inexperienced doctor who enters a single practice is unlikely to become, and an experienced one unlikely to remain, very proficient with the annual quota of four forceps and one breech delivery—or even less with a smaller practice.

The remedy recommended is threefold: (1) Group practice:—In such practices doctors who dislike or are worried by midwifery can hand over their confinements to obstetrically minded colleagues. The aggregate normal and abnormal midwifery in a six-partner practice will offer good experience for two obstetricians. (2) Former obstetric house-surgeons entering general practice should join a group practice, ensuring them adequate experience to retain and develop their skill and helping them to raise the standard of obstetrics in general practice. (3) Maternity units or hospital beds for general practitioners:—In maternity units practitioners can attend their own patients, particularly primiparae, when social conditions prevent a domiciliary confinement.

Stallworthy (1952) published the results of a year's work in four units. There were no maternal deaths among 1,097 cases, the forceps rate was 8%, and the uncorrected foetal mortality rate was 22 stillbirths per 1,000.

For 1950 and 1951 the figures for Dellwood Maternity Unit (in which many of our confinements took place) were 906 confinements, no maternal deaths, a forceps rate of 2.2%, and 12 stillbirths per 1,000. Up to 1954 almost 7,000 mothers had been safely delivered in Dellwood since the last maternal death in 1936. As over 100 experienced and inexperienced practitioners have attended these patients, the credit for this wonderful record belongs to the staff midwives. With alert experienced midwives who work as a team, who are prompt to call for medical assistance, and who are willing to offer tactful advice to inexperienced obstetricians, inexperience matters little provided the practitioner is not too proud to heed the advice.

Risk of Inadequate Antenatal Care

Under the National Health Service practitioners are free to decide the number, frequency, and nature of their antenatal examinations, provided these include an initial examination and another about the 36th week. Sometimes the frequency and thoroughness are unsatisfactory, and occasionally patients are told at the end of the examination at the 36th week, "There is no need to come and see me again." The dangers of toxaemia, eclampsia, disproportion, and post-maturity are thus ignored. A more serious omission is the failure of some doctors to test the blood pressure, which is an omission as dangerous as driving a car with defective brakes, and equally certain to lead to preventable accident or tragedy—sooner or later.

To impress doctors with this fact and to make them remedy this omission, unopened and unread medical journals and ministerial pamphlets are useless, but pressure from the patients might be effective. Patients should, through the

press or radio, be informed that the blood pressure is tested during pregnancy to detect the onset and development of toxaemia, which is dangerous to mother and baby, and which may deteriorate into eclampsia, the principal cause to-day of maternal deaths. They should be told that regular testing of the blood pressure, either by midwife or doctor, or by both, is essential—particularly in the second half of pregnancy—and that if they develop swollen fingers or feet the testing is vitally important. If the midwife fails to do the test, they should visit their doctor. If the doctor fails, they should draw his attention to his oversight, and if he does not respond to the hint, or attempts to dismiss the test as being unnecessary, they should seriously consider changing their obstetrician.

Risk of Post-partum Haemorrhage

Only one of our maternal deaths, the emergency case in 1937, occurred from post-partum haemorrhage. Her case emphasizes the need for diagnosing and treating anaemia (from which she suffered) during pregnancy. That there was but one death from haemorrhage was largely due to the speed with which we in Reading have for many years been able to obtain blood transfusion ; without that the toll would have been considerably higher.

Sometimes patients have lost between two and three pints (1 and 1.5 litres) of blood, but their immediate condition —colour, pulse, and blood pressure—seems satisfactory. One is tempted not to give a transfusion, forgetting that such patients will be liable to sepsis, white-leg, and weeks or months of tiredness due to anaemia. Having already spent one or two hours with the patient, one is loath to send for the flying squad, knowing that one is expected to wait and watch while the transfusion is given. It is only courtesy to wait, but the thought of a further one or two hours' delay, a crowd of patients waiting at the surgery, and many visits to do, prompts one to take a risk.

If the flying squad did not expect one to remain, but said, "Don't bother to wait if you are in a hurry," all desirable transfusions would probably be arranged, with benefit to patients.

Risk for the Baby

The foetal loss was (1) lower in booked cases than in emergencies, (2) lowest in emergencies during the war, (3) lower in nursing-home than in domiciliary primiparae, (4) lower in primiparous breech deliveries than in multiparous. The obstetricians were the same, but the midwives varied. Knowing, in booked cases, that we wished to be present at the delivery, they would not delay sending for us. Hoping to deliver without help in emergencies, they waited—sometimes too long—before sending.

In the absence of visible meconium, midwives sometimes neglect auscultation of the foetal heart. Their detection of foetal distress is therefore delayed, and medical assistance is summoned too late to save the baby's life.

With limited and lucky previous experience of breech delivery, some midwives were unable to deliver extended arms. Doctors were called in time with primiparae ; but with more rapid multiparae the baby was sometimes half-born (and dead) before we arrived. In case of unexpected extension of the arms or difficulty in delivering the head, it is wise for doctors to attend all breech births—primiparous and multiparous.

The many emergencies in the Grove, and the lowest foetal loss in war emergencies, coincided. Apart from the explanation concerning antenatal care, nursing-home midwives, in the Grove and elsewhere, were more reliable than domiciliary ones in auscultating the foetal heart, and the presence of telephones minimized delay in obtaining assistance. In years to come domiciliary midwives should have radio-equipped cars for summoning rapid assistance.

With marked foetal distress, a speedy forceps delivery at home may save a foetal life which would be lost by delay in moving the patient to hospital. Hence the need for general-practitioner obstetricians adept in using forceps.

Risks of Early Rising and Pulmonary Embolism

It is feared that mothers may get up too soon at home. Mothers kept in bed for eight days following confinement usually need assistance, as they stagger on their feet. Their trouble is rising too late, not too soon. To benefit from early rising they should be standing out of bed not later than the third day, before they have lost their previous muscle tone.

Whenever the sirens sounded during the war all mothers in the Grove who had reached the second day of the puerperium walked unassisted downstairs to shelter in the basement. They appeared to benefit, not suffer, from this early ambulation, having few complications and involuting unusually quickly.

The routine at Dellwood was changed three years ago. Mothers remain in bed for two days, stand out on the third morning, and have a bath later that day. On the fourth day onwards they go to toilet whenever they wish. Previously the first bath was on the seventh day. Well over 1,000 mothers have tried and applauded the new regime. Pyrexia and phlebitis are both rare, involution is accelerated, and the mothers appear fit to go home quite two days earlier than formerly—an economic advantage.

The diminished occurrence of phlebitis means less danger of pulmonary embolism (to which, rightly or wrongly, three maternal deaths were attributed). Even supposing early rising did cause an increase in prolapse—which is not true (Atlee *et al.*, 1953)—better far be alive with a prolapse than dead with a pulmonary embolism. There is many a good woman now lying in her grave because she was kept lying too long in her bed after an operation or confinement.

Summary

The obstetric records of a group practice were analysed ; in 17 years 2,911 confinements were attended —2,241 were booked, 670 were emergencies. The proportion of booked cases has increased greatly since the National Health Service.

Mothers were divided into primiparae, secundiparae, and "other" multiparae ; 48.5% of booked and 71.9% of emergency cases were primiparae.

The incidence of each abnormality—forceps, breech, shoulder and face presentations, caesarean sections, eclampsia, twins, and foetal abnormalities—was calculated for the three classes. The respective forceps rates were 17.4%, 3.5%, and 2.0%.

The indications for forceps vary with parity : in primiparae uterine inertia is mainly responsible.

The need for forceps is decreasing : the youth of primiparae is suggested as the main reason. Tables show the declining ages of primiparae and the effect of maternal age on forceps incidence.

Seven maternal deaths are described : the booked maternal mortality rate was 0.007%. The loss of babies was (1) less in booked than in emergency cases, (2) low in wartime emergencies, (3) higher in multiparous than in primiparous breeches, and (4) lower in nursing-home than in domiciliary confinements.

The risks of an inexperienced obstetrician, inadequate antenatal care, post-partum haemorrhage, early rising and pulmonary embolism, and danger to the baby are all discussed. Suggestions are made for lessening these hazards.

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ENHANCEMENT OF THE ANTIGENIC ACTIVITY OF TOXOIDS BY SYMPATHOMIMETIC DRUGS

BY

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The immunization of children with fluid toxoids involves repeated injections of the antigen to achieve a satisfactory degree of protection. Research has been proceeding for some time into ways of improving antigenic efficiency, and a number of successful means have been found. Added water-insoluble mineral carriers—such as alum, aluminium or calcium salts, tapioca, oils and fats, and, lately, bacterial suspensions—have all had an enhancing effect on the antigenic efficiency of fluid toxoids. Their presence in prophylactic toxoids causes local irritation at the site of inoculation, the degree of irritation varying with the type of adjuvant used. It is very marked, for instance, with alum or insoluble calcium salts, but rather mild with bacterial suspensions.

For some years we have been interested in the problem of enhancing the antigenic action of toxoids, and to this end have so far been using *H. pertussis* suspensions with success. We realize, however, that there are occasions when the addition of pertussis vaccines is superfluous, as, for example, to toxoids required for booster doses to older children previously immunized against diphtheria, or to children known to be allergic, into whom the less foreign protein is injected the better.

Our attention has therefore been directed to drugs known to have a local tissue effect, either decreasing the rate of absorption or involving local inflammation. Of substances with the former pharmacological action we have studied the sympathomimetic drugs; with the latter, histamine. We have found that histamine had only a slightly stimulating action on the antigenic response to diphtheria toxoid, whereas the vasoconstrictor effect of the sympathomimetic group had a considerable enhancing effect.

As sympathomimetic drugs we used (1) adrenaline hydrochloride, at a dilution of 1/1,000 or 1/2,000; (2) benzedrine hydrochloride, at a dilution of 1/250; and (3) ephedrine hydrochloride, at a dilution of 1/250. In addition, two amines with no vasoconstrictor action, β-phenylethylamine (at a dilution of 1/250) and phenylethylamine (at the same dilution), were tested and found to be without stimulating effect on the antigenicity of diphtheria toxoid. The method of testing the different antigens was the same as used in earlier experiments (Ungar, 1954). Our new results are given in the Table.

Mean Antitoxin Titres in Groups of Ten Guinea-pigs After Giving Purified Diphtheria Toxoid with Various Substances

Group No.	Substance Added to Diphtheria Toxoid	Antitoxin Response (u./ml.) (Geometric mean of 10 animals)
1	Control. Plain toxoid	0·25
2	β-phenylethylamine 1/250	0·17
3	Phenylethylamine acetate 1/250	0·23
4	Benzedrine hydrochloride 1/250	1·96
5	Ephedrine hydrochloride 1/250	2·21
6	Adrenaline 1/1,000	2·87
7	Adrenaline 1/2,000	3·36
8	Histamine 0·5 μg./ml.	0·70

Doses: 1 ml. diphtheria toxoid (2·5 Lf./ml.) injected by subcutaneous route. Two doses with four-weeks interval. Animals bled two weeks after second dose.

It should be noted that the amount of the vasoconstrictor added to the toxoid must be carefully chosen, for we have observed that higher concentrations of vasoconstrictors than those quoted above may cause local damage to the injected tissue.

From our results it may be concluded that the addition of vasoconstrictors had a considerable enhancing effect on the antigenic action of diphtheria toxoid. As adrenaline hydrochloride is stable only in an acid medium, it cannot be kept in contact with the toxoid for any length of time. On the other hand, ephedrine and benzedrine, being stable at a neutral *p*H, can be mixed with the toxoid and stored at a suitable temperature.

It seems that the addition of a vasoconstrictor to a toxoid might be useful for immunizing children against diphtheria; it has the additional advantage that its anti-allergic action would be of value for children subject to allergic manifestations after injections of antigens.

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ACTIVITY OF PIPERAZINE, IN VITRO, AGAINST ASCARIS LUMBRICOIDES

BY

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Since the introduction and acceptance of piperazine as the drug of choice for the treatment of threadworms much interest has been taken in the possible value of this drug against other intestinal helminths. Piperazine hydrate and certain salts of piperazine have been shown to possess a high efficiency against *Ascaris lumbricoides* in man (Fayard, 1949; White, 1954; Brown, 1954; Brown and Sterman, 1954; O'Brien, 1954; Rearden, 1954; Goodwin and Standen, 1954). Little work has been reported on the *in vitro* activity of piperazine against ascarides. Poynter (1955), using piperazine adipate *in vitro* against *Parascaris equorum*, showed that drug-affected worms recovered when they were placed in drug-free medium. The present series of experiments, described below, was carried out preparatory to trials with piperazine citrate against *A. lumbricoides* in man (Goodwin and Standen, 1954), and the experience so gained led to the observations made by these workers on the recovery of drug-affected worms passed by treated patients.

Materials and Method

The worms used in these experiments were *A. lumbricoides* from the pig. The culture medium was a modified Baldwin's solution, as described by Cavier and Savel (1952), in which these workers found it possible to keep ascarides alive for as long as 22 days. The composition of the medium was: NaCl, 0.8%; KCl, 0.02%; $CaCl_2$, 0.02%; $NaHCO_3$, 0.15%; $MgCl_2$, 0.01%; glucose, 0.5%; phosphate buffer to bring the solution to *p*H 8.4–8.6.

The worms were obtained from the abattoir, where they were removed from the gut immediately after the pig was slaughtered. They were placed at once in culture medium contained in a vacuum flask, and upon arrival at the laboratory were transferred to 8 by 5-in. (20 by 12.5-cm.) circular glass troughs containing fresh medium at 37° C. The worms were maintained overnight in this way, after which the most vigorous specimens of each sex were selected for experiment. For each experiment, two male and two female worms were placed in each trough and fresh medium was added to provide 125 ml. of fluid per worm. The drugs were added, in solution, to provide equivalent quantities of piperazine base as contained by 1:200, 1:280, 1:400, 1:560, 1:800, 1:1,120, and 1:1,600 dilutions of piperazine

hydrate. The object of this procedure was to provide a means of observing any difference in efficiency of the drugs that could be related to the varying character of the acid radical. The temperature was maintained at 37° C. throughout the experiments. The medium was changed every 24 hours, either with or without addition of the drug, according to experimental requirement. *p*H readings of the medium were taken before and after addition of the drug and again just before the change of medium, at the end of each 24-hour period. Since the worms were found to be sensitive to touch and to bright light, these stimuli were applied to drug-affected worms to determine their degree of vitality. The worms were examined frequently after addition of the drug in order to observe any drug effects, and also after removal to drug-free medium for signs of recovery.

Three salts of piperazine—the citrate, the adipate, and the phosphate—were tested to compare their activity, *in vitro*, against *A. lumbricoides*. The experiments were divided into two groups: (1) to determine the minimum drug concentration required to produce an effect on the worms, and (2) to observe the relative rates of recovery from the drug effect.

Results

Effects of Piperazine upon the Worms.—The introduction of piperazine salts in solution had no immediately apparent effect upon the worms. There was no evidence of increased activity due to irritation. With all three salts the first effects were apparent five to six hours after introduction of the drugs. At this time the worms began to show signs of reduced activity. Gradually their movements became slower until, by 24 hours, they had ceased altogether. Both sexes were affected equally. At 24 hours the colour of the worms was unchanged. They did not respond to bright light—a stimulus to which normal worms proved highly sensitive—but most worms gave a just discernible response to mechanical stimulation of the anterior ends. These effects were observed at 24 hours in drug dilutions of 1:200–1:560. After 72 hours' immersion in drug medium some of the worms in drug dilution of 1:800 showed signs of reduced activity, but still responded to light stimulus. No one salt of piperazine was more effective than any other.

Recovery of Drug-affected Worms.—In this series of experiments the worms were exposed to the drug for 48 hours, with one change of drug medium, and were then placed in drug-free medium. Completely torpid worms recovered their full activity in a half to two hours. There was little difference in the rate of recovery from the effects of the different salts of piperazine, although the worms affected by piperazine phosphate appeared somewhat less active than those affected by the citrate or the adipate.

pH of the Medium.—Cavier and Savel (1952) observed that the *p*H of a medium containing living worms decreased over 24 hours and that the fall from *p*H 8.0 to *p*H 5.8–7.1 was more rapid when the medium contained glucose. Control experiments confirmed these observations, but the addition of the drug to the media lowered the initial *p*H. It was found that, after addition of the drug, the *p*H fell from an initial 8.4 to 6.0–6.9. In the greater dilutions, piperazine adipate gave less reduction of *p*H than did the citrate or the phosphate. During the course of the experiments the *p*H fell progressively to 5.4–6.3 during each 24-hour period. At the beginning of the experiments citric acid was added to the medium in one of the two control groups in sufficient quantity to produce an initial *p*H equivalent to that of the test medium containing most drug. In this instance the *p*H continued to fall, and it was found that such a medium, with *p*H even as low as 4.8, did not materially affect the worms by the end of the 24-hour period.

In test media in which the drug addition had produced complete torpidity in the worms the *p*H continued to fall. This provided the first evidence that the worms may not have been affected in any vital manner by the action of the salts of piperazine, but that although they were reduced to immobility their metabolic processes continued.

Discussion

The appearance of worms in the stools of patients treated less than 24 hours previously and the recovery of such worms when placed in warm Ringer solution (Goodwin and Standen, 1954) suggest that the action of piperazine against *A. lumbricoides* in man is very similar to that against *A. lumbricoides* from the pig *in vitro*. If these similarities may be interpreted to imply a mode of drug action common to both conditions of environment then it is perhaps possible to accept the time relationship of drug action to movement *in vitro* as a basis for speculation upon the most advantageous time to give treatment to infected patients. Obviously, to achieve successful treatment drug-affected and narcotized worms must be voided in the faeces before the effects of the drug have worn off. Also, as is seen from the *in vitro* experiments, the narcotic effect *in vivo* is likely to persist for only a half to two hours after the worm is freed from the influence of the drug. Similarly, it seems almost certain that the worms in the small bowel are likely to be affected five to six hours after the drug has been given and will remain fully narcotized for as long as a piperazine concentration of 1:560 or more persists. On the other hand, it may well be that the drug effects, apparent under conditions of *in vitro* experiments, would be real much earlier *in vivo*, where peristaltic movements would assist in dislodging worms whose normal ability to maintain position in the bowel was even slightly impaired. It would appear, therefore, that successful treatment depends largely on the size of the dose, the rate of excretion of drug from the bowel once the worms have been affected, and the rate of bowel movement.

It may be argued that the most certain way of achieving worm clearance would be a series of doses each large enough to induce and maintain narcosis in the worms over the period of a normal bowel clearance. However, for ascaris-infected populations of most tropical and subtropical countries the administration of a single dose is obviously preferable to continuous and controlled treatment, providing the dose is large enough to affect the worms and is given at a time of day when the duration of worm narcosis is most likely to extend to the time of the usual morning bowel movement. In persons with normal daily bowel movements this can be achieved by the single large dose in the morning, but it is likely that worm clearance would be more certain if the drug was given before the evening meal (Goodwin and Standen, 1954). Obviously, in costive patients the opportunity for a return to normality of affected worms would be much enhanced, and it would appear desirable that the normal rate of bowel movement should be assisted by a purge timed to take effect within the limits of duration of worm narcosis.

Conclusions

From the above experiments it is concluded that piperazine citrate, adipate, and phosphate are equally active, *in vitro*, against *A. lumbricoides* from the pig. The drugs induce a state of narcosis in the worms, which recover in drug-free medium. The rate of recovery of the worms in drug-free medium is much the same—namely, a half to two hours—for all three salts of piperazine tested. The effect of the drug is gradual and does not stimulate violent movements of the worms. It is considered that this is a most desirable feature of the use of piperazine in ascariasis, since it may preclude the possibility of rupture of the bowel wall or occlusion of the common bile duct as a result of the efforts of large and muscular worms to escape from an antagonistic environment.

Summary

Piperazine citrate, adipate, and phosphate were tested *in vitro* against *A. lumbricoides* from the pig. All three salts of piperazine were equally efficient in inducing a state of narcosis in the worms.

The drug effect was gradual and did not irritate the worms.

The drugs did not kill the worms. When placed in drug-free medium all affected worms recovered in half to two hours.

In view of the similarities observed between the drug effects of piperazine against *A. lumbricoides* from the pig, *in vitro*, and clinical use of piperazine citrate against ascariasis in man, the relationship between the beginning of drug action, duration of narcosis, rate of drug excretion, and the intestinal emptying time of the host is discussed.

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CINERADIOGRAPHY OF THE URINARY TRACT

BY

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The great advantages which would accrue from being able to visualize the actual movements of the renal pelvis, calices, and ureter have been obvious to urologists since the advent of contrast media and the fluorescent *x*-ray screen. Many urologists perform their ascending pyelograms under screen control, but, although much valuable information can be obtained by this means, the small volume of opaque medium which can be used provides poor contrast as compared with a barium suspension in the bowel, while the light intensity is insufficient to provide really clear definition of the calices.

The fluorescent screen can, of course, be made brilliant enough for clear definition, and even for photography, by greatly increasing the screening current, and this is how the ordinary excretion urogram film is exposed. A high screening current is used for a very short exposure. Unfortunately the *x*-ray dosage absorbed by the patient during such an exposure is high and can be repeated only a few times with safety. Up to the present time fluoroscopy, and certainly photography, has been limited by this problem of having to choose between a low *x*-ray dosage with poor illumination for a reasonable length of time or a high *x*-ray dosage with brilliant illumination for a few seconds only.

An X-Ray Image Amplifier

However, this problem has now been solved by the use of an *x*-ray image amplifier, which, as its name implies, amplifies a poorly illuminated screen image by electronic means (Coltman, 1948; *British Medical Journal*, 1955).

The instrument is attached to an ordinary *x*-ray apparatus in place of the usual viewing screen, so that the *x* rays strike a metal screen inside an evacuated glass tube. Instead of producing a fluorescent image, this screen emits electrons which are greatly accelerated through the tube by a potential difference of 25 kV, and are kept in focus by several "electron lenses" until they strike a small, 1-in. (2.5-cm.) fluorescent screen at the other end. This is similar to an ordinary fluorescent viewing-screen except that the image is reduced in size to 1 in., but is extremely brilliantly illuminated. An optical system can now project this image either through an eye-piece, on to a mirror system or, of greater importance still, into the lens of a cinecamera (Fig. 1).

A bright visual image of the renal shadow can be seen with a screening current as low as a half to one milliampere, while cineradiography can be carried out with a current as low as 6 to 7 milliamperes in some cases.

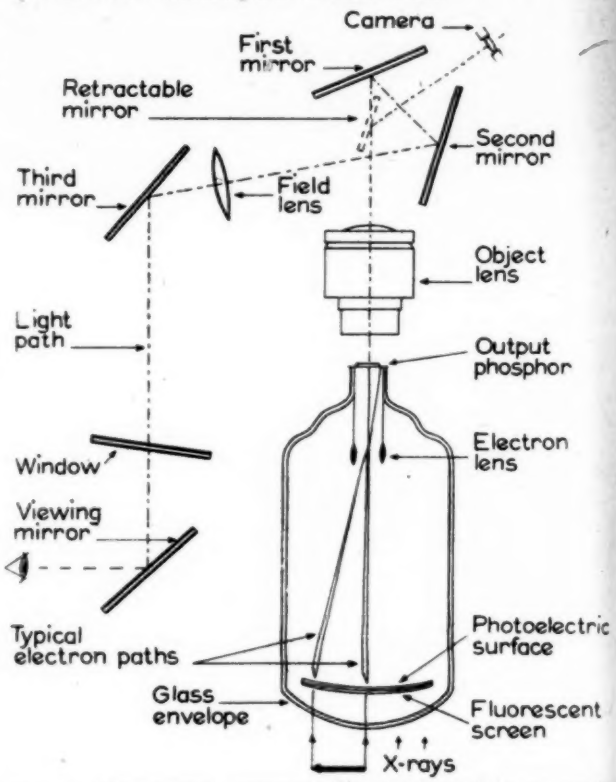


FIG. 1.—Diagrammatic representation of Marconi image amplifier, showing path of electrons through tube, together with optical system of mirrors for visual screening. The retractable mirror, which is of a semitransparent nature, is used to reflect some 90% of the light into the 16-mm. cinecamera while still allowing the operator to see what is being photographed.

At the present time, using the Marconi or the Philips instruments, the area to be screened is limited to 5 in. (13 cm.) in diameter by the size of the image amplifier tube, but it is hoped that this will be increased in the not too distant future. For urological work this small field is only just large enough to cover the whole kidney in the average patient, but the potentialities of this new method of investigation are very great indeed.

Potentialities of the Method

Using one of the new rapidly excreted opaque media such as "hypaque," with its radiologically denser molecule, the slow movements of the calices can be clearly seen during excretion urography. The very marked influence which gravity exerts on the emptying of the pelvis has proved a great surprise, at least to me. For example, if the pelvis is filled from below with the patient lying flat, the calices may remain filled for an appreciable time after the catheter is withdrawn. If the table is now tilted towards the vertical position, the calices immediately increase their movements and the pelvis may empty in a matter of seconds. The study of delayed emptying in pelvi-ureteric junction lesions, of decubitus calculi, and many other problems will surely be stimulated by these new possibilities (Fig. 2).

As one would expect, a calix damaged by a calculus or by inflammation loses its contractile power, and the possibility of detecting early tuberculous lesions is being studied with some success.

The argument whether peristalsis is present in the ureter or not can now be answered. One can see and film the column of medium moving down the ureter from one segment to the next. One can also see the very active but

A.—Left pelvi-ureteric junction.

B.—Two seconds later, showing contraction of upper ureter, with separation of tail of descending column from head of upper column.

C.—One second later still; tail of descending column has now passed out of the field.

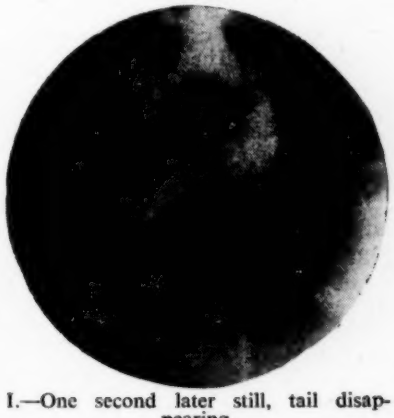
D.—Right uretero-vesical junction.

E.—Four seconds later, showing tail of column just appearing.

F.—One second later still, showing ureter nearly empty and tail disappearing into bladder.

G.—Right pelvi-ureteric junction.

H.—Two seconds later, tail of descending column separating from pelvis.



I.—One second later still, tail disappearing.

FIG. 2.—Emptying retrograde pyelograms. Pelvis filled with medium through a catheter, which was then withdrawn. Fluid travels down ureter in a series of columns about 3–4 in. (7.5–10 cm.) in length. Each column is separated from its fellow above or below by one or more segments of empty, and presumably contracted, ureter. A column does not pass down to the bladder in one movement, but is always held up momentarily in the region of the so-called "ureteric spindles" before passing on to the next spindle. Each column has a clearly defined head and tail.

sometimes purposeless movements of a megaloureter, showing the medium forced upwards as well as downwards, but not necessarily out through the ureteric orifice.

A further obvious use of this principle is in renal arteriography, where the timing of the exposures in the past has been all-important. Using the intensifier and cinecamera, the whole cycle from injection to nephrogram and beyond can be continuously recorded. The great disadvantage at the moment is the limited size of the screen, since it is not always possible to include the aorta and the kidney in the same field.

It has already become evident that the interpretation of some of the unexpected phenomena which we are now seeing will require time and experience before their full significance can be assessed, but the potentialities appear great, particularly in the study of hydronephrosis, ureteric spasm, aortography, and such problems of rapid muscular action as the micturating cystogram and ureteric reflux.

This work is being carried out with a Philips intensifier (Van Alphen *et al.*, 1952) for the Institute of Urology at St. Paul's Hospital, in conjunction with Dr. J. J. Stevenson; and, using a Marconi amplifier (Coltman, 1948; *British Medical Journal*, 1954), with assistance from the Medical Research Council, at Hillingdon Hospital in conjunction with Dr. F. G. Greenwood.

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CANICOLA FEVER SIMULATING POLIOMYELITIS

BY

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The subject of canicola fever—human infection with *Leptospira canicola*, a spirochaetal parasite of dogs—was fully reviewed by Broom (1951), who concluded that, although 15 to 20 cases were recognized annually in Great Britain, the incidence was probably higher. The clinical manifestations of these infections are protean, but symptoms of mild meningeal irritation are a feature of a large number of cases and, in the absence of specific investigation, these cases may be labelled poliomyelitis (Alston and Broom, 1949 ; Chesney, 1951).

Since 1948 at least four cases of canicola fever have been encountered in the Royal Free Hospital, but, although a canine source was suspected in all, examination of the dog has been possible in only the last case. All four cases presented in a similar fashion, with headache, pains in the back and limbs, pyrexia, vomiting and signs of meningeal irritation, a mild degree of nephritis, and injection of the conjunctivae ; in three of them the latter feature, unusual in poliomyelitis, prompted further inquiry. Examination of the cerebrospinal fluid in all four cases revealed a pleocytosis of the lymphocytic type, with counts of 1,260, 450, 52, and 9 cells per c.mm. respectively. The corresponding protein levels were 90, 100, 90, and 50 mg. per 100 ml. Excess globulin was present in all instances. The pleocytosis shows a rough parallelism with the protein level, thus providing a point of distinction with poliomyelitis, in which the protein increase is often delayed to the second and later weeks, when the cells are decreasing or have returned to normal levels. The sugar and chloride levels were within normal limits. The blood serum agglutination titres to *L. canicola* were 1:10,000 ; 1:300,000 ; 1:10,000 ; and 1 : 3,000 (rising titre demonstrated). There was no significant rise of antibody to *Salm. typhi*, *Salm. paratyphi B*, *Brucella abortus*, and *Comp. salmonella*.

In the fourth case there was a clear history that the patient's dog had suffered from recurrent enteritis since puppyhood. The animal was sacrificed, and the report on the post-mortem and histological findings showed the typical lesions associated with canicola infection in dogs (McIntyre and Montgomery, 1952).

Discussion

Leptospirosis should be considered in all cases presenting with signs of meningeal involvement and with C.S.F. changes showing pleocytosis of the lymphocytic type and a rise in protein and normal sugar and chloride levels. If, in addition, there is evidence of nephritis and conjunctivitis, the probability of canicola infection is heightened and appropriate special investigations should be undertaken. These consist primarily in the examination of " paired sera " (taken at an interval of 10 to 14 days) for the detection of a rising titre of antibody to leptospiral organisms. It is important to note, however, that in the early stages of leptospirosis a patient's serum may react with more than one species of *Leptospira*. Gispen and Schuffner (1939) found that the titre against the infecting species might be lower than the titre for a related serological type. This " paradoxical reaction " (Führer, 1951) may lead to errors in diagnosis, as occurred in a case described by O'Connell and Broom (1952). The serum of any suspect dog should always be examined, and in this connexion it should be remembered that healthy dogs, including untrained puppies, may be symptomless carriers, which are a particularly likely source of infection for humans. As in Weil's disease, bathing in infected pools has been shown to be a source of infection ; freshwater pools should therefore be protected from both rat and dog contamination and the water chlorinated to destroy any leptospires which may gain access (Broom, 1951).

Although the disease in the dog may run an acute course with ulceration and necrosis of the tongue and buccal mucosa, ending fatally from acute uraemia in 36 to 96 hours, usually it takes a mild form with vague symptoms suggestive of renal damage, but there may be no overt signs of illness (Joshua, 1950). Histological examination of the kidneys of healthy carrier dogs shows an interstitial nephritis, apparently progressive, which many veterinary surgeons believe to be the cause of chronic nephritis so common in older dogs (Broom, 1951). The condition in the dog responds to treatment with penicillin (Joshua and Freak, 1947) but Brunner and Meyer (1949) showed that the antibiotic did not eliminate the leptospires from the kidney and that dogs so treated continued to shed the organisms in the urine. They found that a subsequent course of streptomycin in doses of 40 mg. per kg. body weight daily for four days effectively terminated the carrier state.

As the disease in the human usually runs a benign course, treatment is not essential and in two of our cases no specific therapy was given. One case received 2 mega units of penicillin daily for six days and made an uneventful recovery, but the inability of the drug to pass the blood–brain barrier in effective concentration renders it unsuitable for cases with meningeal involvement. In the remaining case marked deterioration in the general condition, with increase of meningism and rise of temperature on the eighth day of illness, made some form of specific therapy imperative. The administration of 1 g. of chloramphenicol four-hourly up to a total of 41 g. ensured prompt resolution of pyrexia and uneventful recovery. In the treatment of experimental canicola fever Uhlenhuth and Schoenherr (1951) found chlortetracycline (" aureomycin ") and oxytetracycline (" terramycin ") effective but thought chloramphenicol had no value. Whitehouse (1952) also considered chlortetracycline had definite antileptospiral activity in human infections. Hall *et al.* (1951) came to the conclusion that none of the antibiotics they used, including chloramphenicol, were effective even when administered early in the course of the disease.

Summary

Four cases of canicola fever simulating poliomyelitis were observed in North London during the period 1948–54.

The presence of mild conjunctivitis and nephritis accompanying symptoms of meningitis is suggestive of canicola fever. Investigations include agglutination tests on " paired sera " from the patient and suspected dogs.

Although chloramphenicol appeared to bring about a marked improvement in one case there is no convincing evidence that any antibiotic is specific, and a further search for a satisfactory agent is indicated.

I am indebted to Dr. G. Hamilton Hogben, Medical Officer of Health, Borough of Hornsey, for his help and interest in the epidemiological survey of the recent case, and to Mr. J. E. Smith and Mr. J. C. Whitney, of the Royal Veterinary College, for their report on the examination of the serum agglutination titres and post-mortem findings in the dog.

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CANICOLA FEVER WITH NEUROLOGICAL COMPLICATIONS

BY

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Infection with *Leptospira canicola* is widespread among dogs in Great Britain, and the surveys of Stuart (1946) and Broom and MacIntyre (1948) provided serological evidence that up to 40% are infected during their lifetime. Proved infections in man, however, are not common, and the known incidence quoted by Alston (1951) was 25 and 33 cases in 1949 and 1950 respectively. Although MacKay-Dick and Watts (1949) stressed that recognized cases are by no means always mild, the patient usually recovers completely. Only two deaths, both the result of renal involvement, have been reported —by Weetch *et al.* (1949) and Wolff *et al.* (1951).

Campbell *et al.* (1950) suggested that ocular and nervous symptoms occur more frequently in canicola fever than in Weil's disease. The only sequela they noted, however, was iridocyclitis in two of their six cases. The neurological complications of the leptospiroses were reviewed by Scheid (1949), and these included subarachnoid haemorrhage; paralysis of the palatal, facial, and oculo-motor nerves; brachial and sciatic neuritis; transverse myelitis; and paralytic bulbar forms akin to poliomyelitis. van Thiel (1948) noted in addition encephalomyelitis and peripheral neuritis. He considered that the prognosis for the meningitis is good, and that the various neuritides eventually end in recovery despite a somewhat protracted course. These reports, however, mainly concern Weil's disease, and neurological complications do not appear to have been a feature of canicola fever. The following case is therefore of interest in that infection with *L. canicola* was followed by a cervical radiculitis.

Case Report

A man aged 42 was admitted to hospital on June 29, 1953. He had been in good health until eight days previously, when he noticed a tightness in the chest which was increased by deep breathing. Two days later he developed a severe retro-orbital headache with photophobia, and these symptoms persisted. A week before he became ill he had purchased a young puppy. The animal had discharging eyes, and later developed frequency of micturition and weakness of the hind legs. He had nursed it himself and treated its eyes with ointment obtained from a chemist. It had improved by the time he himself became ill.

Examination on admission on the ninth day of his illness revealed a temperature of 100.6° F. (38.1° C.), but no tachycardia or tachypnoea. He was not seriously ill, but had slight photophobia and neck stiffness. Both conjunctivae were injected and there was a scanty morbilliform rash on his body. There were no other abnormal clinical findings.

Investigations.—Lumbar puncture: initial pressure 170 mm., with free rise and fall on jugular compression. Cerebrospinal fluid: slightly turbid; 500 cells per c.mm. (95% lymphocytes); protein, 120 mg. per 100 ml.; a slight excess of globulin; chlorides, 770 mg. per 100 ml.; glucose, 60 mg. per 100 ml.; no acid-alcohol-fast bacilli or other organisms seen in direct film; culture sterile in 24 hours. Blood count: 6,000 leucocytes per c.mm. (polymorphs 51%, monocytes 10%, lymphocytes 35%, eosinophils 3%, basophils 1%); haemoglobin, 93% (13.7 g.%); E.S.R., 47 mm. in the first hour (Westergren). Urine: no albumin, no red cells or casts in centrifuged deposit, culture sterile.

On the tenth day his condition was unchanged except that he had developed loose watery stools. His temperature was intermittent and reached 101° F. (38.3° C.). A radiograph of the chest was normal. He was given chlortetracycline, 1 g. orally six-hourly, together with vitamin B complex.

On the twelfth day his diarrhoea and other symptoms had subsided, and the meningism, rash, and conjunctivitis had almost gone. His temperature was normal, and remained so. The chlortetracycline was reduced to 0.5 g. six-hourly.

Thereafter he made an uninterrupted recovery. The cerebrospinal fluid was normal on the twenty-first day and he was discharged home well on the twenty-third day. He had received 23.5 g. of chlortetracycline in 11 days.

The results of further laboratory investigations were: cultures of urine and faeces: no salmonellae or shigellae isolated. Serum agglutinations to salmonellae: anamnestic rise and fall in *Salm. typhi* O and H titres; Vi<1/5. Serum leptospiral agglutinations were as follows:

Day of Illness	*L. canicola*	*L. icterohaemorrhagiae*
13	+ (partial) to at least 1/3,000	+ (partial) to at least 1/3,000
20	—	+ (partial) 1/1,000
	+ (partial) 1/3,000	Trace 1/3,000
	−1/10,000	−1/10,000

Absorption tests showed clear evidence of infection with *L. canicola.*

On July 4 the puppy was examined by a veterinary surgeon. He reported that it was well apart from a mild conjunctivitis which could be due to one of the virus diseases of the distemper group endemic in the area. The animal's blood, however, showed the following titres:

L. canicola	*L. icterohaemorrhagiae*
+1/30,000	+ (partial) 1/10
Trace 1/100,000	−1/30
−1/300,000	

The patient was seen in the out-patient department on August 18. He was well, but said that one week after discharge from hospital he had noticed "an aching over the shoulders." This was quickly followed by weakness of the right shoulder muscles and inability to raise the arm above the shoulder. At the same time he had had a sensation "like sunburn" over the outer aspect of the left forearm, and weakness of the left thumb.

Examination showed a paralysed right serratus anterior with winging of the scapula, and slight weakness of the left thumb, particularly of extension and abduction. No other objective findings were present in the central nervous system or elsewhere. Electrical stimulation of the nerve to the right serratus anterior produced no muscular response, but stimulation of the left thumb muscles caused a normal but reduced response.

Physiotherapy was started, and on September 21 the thumb had recovered, but the serratus anterior was still paralysed. He could now raise the right arm, however, as a result of hypertrophy of the other shoulder muscles and trick movements.

On December 28 his clinical condition was unchanged; the serratus anterior remained paralysed. A repeat radiograph and screening of the chest, however, showed a partially paralysed right diaphragm without apparent cause in the chest. This indicated for the first time that the right phrenic nerve was also involved. By September, 1954, 18 months after the onset of his illness, there had been considerable recovery of both the serratus anterior and the diaphragm.

Comments

The neurological signs and symptoms in this case pointed to bilateral patchy involvement of either the cervical segments of the spinal cord or its roots or nerves, and the

clinical picture resembled very closely the shoulder-girdle syndrome or neuralgic amyotrophy described by Parsonage and Aldren Turner (1948). They reviewed the previous sporadic reports of this syndrome and recorded 136 cases which had occurred after war injuries, operations, and infections; Miller and Stanton (1954) also reviewed similar complications following prophylactic inoculation.

The close similarity between the shoulder-girdle syndrome and the occasional consequences of inoculation perhaps point to a common cause. Miller and Stanton (1954) suggested that inoculations produce an anaphylactic hypersensitivity reaction which in turn gives rise to axon swelling and polyradiculitis. The restriction of the clinical features to the brachial plexus would appear to depend upon anatomical factors, the swollen roots in this region being more easily compressed by the dura or in the intervertebral foramina.

In this case injury was not responsible for the muscular paralysis. To postulate a virus infection as the cause involves considering a dual aetiology. Injection therapy was never used, and the only drugs given were chlortetracycline, barbiturates, and compound codeine tablets. It seems reasonable, therefore, to presume that infection with *L. canicola* gave rise to an antigen-antibody reaction which presented as the shoulder-girdle syndrome.

The dog subsequently died of hard pad, and none of its other human contacts developed clinical canicola fever.

Summary

A case of canicola fever is described; the infection was contracted from a pet dog. Initial recovery was complete after treatment with chlortetracycline, but convalescence was complicated by a cervical radiculitis. The right serratus anterior and right diaphragm were paralysed and there was transient paresis of the left thumb. Initial subjective sensory changes over the left forearm were also present. Recovery was finally complete 18 months after the onset of the illness.

A review of the literature shows that, whereas neurological symptoms are frequent, neurological complications are uncommon in canicola fever. The features of the case indicate that it is a further example of the shoulder-girdle syndrome. It is presumed that this resulted from a hypersensitivity reaction to the infection.

I wish to thank Dr. C. S. Darke, under whose care this patient was treated, for permission to publish. I am also indebted to Dr. Darke and others members of the medical staff of the City General Hospital for their help and encouragement in the preparation of this report.

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A leaflet on foot exercises for children has recently been published by the Foot Health Educational Bureau of the Central Council for Health Education. This leaflet, produced in collaboration with Guy's Hospital, presents a series of simple movements in place of the traditional more drastic exercises for feet, with appealing illustrations. Directions and pictures are simple enough for a child to interpret and follow. The price of the leaflet is 4s. a dozen. Copies may be obtained from the Central Council for Health Education, Tavistock House, Tavistock Square, London, W.C.1.

Medical Memoranda

A Case of Recurring Hydatidiform Mole

The incidence of hydatidiform mole is difficult to estimate, as it is now recognized that minor degrees of vesiculation of chorionic villi are quite commonly found when abortion specimens are examined histologically, but the macroscopic mole probably occurs in approximately 1 in 1,000 pregnancies.

In a follow-up of more than 50 cases of hydatidiform mole treated at the London Hospital from 1905 to 1937, Brews (1939) found a single case of recurring molar pregnancy. Essen-Möller (1912) collected 18 cases of repeated molar pregnancy. Clinically, associated theca lutein cysts are commoner in the age group below 30 years, and these cysts have been known to undergo torsion after the uterus has been emptied.

CASE REPORT

A 1-para aged 30 attended the gynaecological clinic on December 28, 1953, complaining of a blood-stained vaginal discharge which had persisted for three weeks and had followed a six-weeks period of amenorrhoea.

In November, 1951, she spontaneously expelled a hydatidiform mole, and this was followed by evacuation of the uterus per vaginam under a general anaesthetic. Following this, quantitative Aschheim–Zondek tests were done at regular intervals until October, 1952, and were all negative. She was next seen in February, 1953, when she was found to be 16 weeks pregnant, the size of the uterus corresponding with the period of amenorrhoea. In July, 1953, she had a spontaneous delivery of a live baby girl. Following this normal pregnancy she had three normal menstrual periods, occurring every 31 days, the bleeding lasting six days. Her last period had been on October 22, 1953. After six weeks' amenorrhoea she began to have a blood-stained watery discharge per vaginam, and the day before she was seen she had had a heavy blood loss. She had nausea, but otherwise had been well.

On examination her general condition was good and her breasts appeared to be active. The uterus was palpable abdominally and was enlarged to the size of a 12-weeks pregnancy. On pelvic examination the size of the uterus was confirmed. A quantitative Aschheim–Zondek test was done and was positive undiluted and in a dilution of 1 in 10, but was negative in higher dilutions. Two weeks later the patient was seen again, when she said that she had continued to bleed intermittently and had been vomiting. Her blood pressure was 140/90 mm. Hg, and no albumin or acetone was detected in the urine. On abdominal examination the fundus of the uterus was palpable 1 in. (2.5 cm.) below the umbilicus, although the period of amenorrhoea was then only 12 weeks. No foetal heart sounds were heard and no foetal parts palpated.

The following day the patient was admitted to hospital for observation. Her haemoglobin was 72%, and a catheter specimen of urine showed a very faint trace of albumin, but was otherwise normal. While in hospital she continued to have intermittent bleeding per vaginam and, although her vomiting improved, nausea persisted. Her blood pressure varied between 135/75 and 110/60. *X*-ray examination of her abdomen showed no foetal parts. Her uterus continued to enlarge rapidly, and on February 2, 1954, after 15 weeks' amenorrhoea, the fundus of the uterus was above the level of the umbilicus. A quantitative Aschheim–Zondek test done on January 25 was positive in all dilutions up to 1 in 1,000. A diagnosis of hydatidiform mole was made, and it was decided to evacuate the uterus.

On February 3 laparotomy was performed. On palpation of the uterus no foetal parts were felt. The uterus was opened through a lower segment incision, and was found to contain a large hydatidiform mole. The uterine cavity was evacuated completely. Both ovaries contained multiple theca lutein cysts. These were left *in situ*.

The patient made good progress, and the post-operative period was uneventful. She was discharged on the 17th day after operation. The Aschheim–Zondek test, repeated on the 12th post-operative day, was positive undiluted, but negative in all dilutions.

It is unusual to find the Aschheim–Zondek test positive in such high dilutions as described in this case, and very careful follow-up of this patient with quantitative Aschheim–Zondek tests done at regular intervals will be necessary for at least two years.

My thanks are due to Mr. Anthony C. Pearson for permission to publish this case and for his kind and helpful advice.

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Poliomyelitis Simulating Tetanus

The following case, which presented unusual features and responded well to therapy, seems to be worth recording.

CASE REPORT

A boy of 4 years was admitted to hospital on September 25, 1954, giving a history of anorexia, abdominal pain, cough, lethargy, and pyrexia lasting in varying degree for nearly a week. On the day before admission "twitching" of the arms and legs appeared and he could not sit up. There was no family or personal history of fits. He had had no injections in recent months and there was no known injury or contact with any infectious disease.

On admission his temperature was 99.4° F. (37.4° C.), pulse 110 and respirations 24. He was an intelligent, co-operative boy who preferred to lie quietly but stiffly on his back. There was extreme spasm, more marked on the right than left, of the erector spinae, abdominal muscles, and especially of the hamstring and plantar flexors, making flexion of the ankles, knees, hips, and trunk impossible. When lifted up he was as rigid as a poker from head to foot and did not resent being moved about. The upper limb and respiratory muscles were unaffected and the stiffness of the neck muscles was perhaps not greater than that due to the meningism usual in poliomyelitis. The superficial and deep reflexes, including those of the legs, were normal. There were several healed and healing sores around the knees and ankles. The cerebrospinal fluid showed 32 cells per c.mm., mainly lymphocytes; protein, 60 mg. per 100 ml.; excess of globulin; chlorides, 720 mg. per 100 ml.; sugar, 56 mg. per 100 ml. He was given tolazoline hydrochloride, 12.5 mg. six-hourly for five days, without improvement, but there was a definite temporary response to hot packs and baths. His temperature fell to normal within two days and the spasm improved gradually over a period of two weeks. The degree of paralysis became apparent only after a week, when the spasm was decreasing. There was moderate weakness affecting the left hamstrings, lower back, and pelvic girdle; the deep reflexes remained brisk. In the first 36 hours after admission he had urinary retention, which responded promptly to the baths. Three weeks later he was able to walk fairly well unaided; subsequent improvement on graduated exercises was steady but slow, and five weeks after the onset he was sent to an orthopaedic hospital, where he improved considerably in the six weeks since his transfer, but some spasm and weakness persisted, especially in the hamstrings. While complete recovery was expected, its speed could not be predicted with certainty.

COMMENT

The incidence and severity of muscular spasm in poliomyelitis vary greatly from country to country, from epidemic to epidemic, and even at different periods of the same epidemic in a given area. The muscular spasm is generally, but not in the present case, accompanied by hyperaesthesia and by pain and tenderness of considerable, sometimes extreme, intensity, especially in adults, which may impede or even lead to the postponement of various physiotherapeutic measures. A warm bath was found to be more effective than the conventional hot pack in this instance; a transportable bath available at the bedside may prove a boon in similar cases, when pain and tenderness are predominant features.

STELLA MANNERS, M.B., B.S.,
House-physician, Infectious Diseases Department, Royal Free Hospital.

Hodgkin's Disease presenting as Hydrarthrosis of Knee

The following case is of interest because of its unusual presenting symptoms and the intense periosteal reaction, with only minimal chest symptoms and an illness of comparatively short duration.

CASE REPORT

A man aged 21, repatriated from Korea, was admitted as a case of chronic hydrarthrosis of the right knee, possibly associated with a congenital deformity of the patella. He gave a history of minor trouble with his knees, particularly the right one, in the past six months, of the nature of aching and swelling following games, and a chronic "smoker's cough." Nothing more dramatic occurred until September, 1953, when, in Hong Kong, he developed a productive cough and pyrexia in addition to idiopathic swelling of the right knee. His chest was radiographed, but no further action was taken. He was allowed to proceed to Britain, and all his symptoms had subsided long before his arrival. On return home his knee again swelled up after activity, and he therefore sought advice, though he felt perfectly fit apart from this.

Examination showed a generalized, painless, discrete adenitis. In addition, a large, hard, glandular mass was found in the neck just above the inner end of the right clavicle. There was a moderate effusion into the right knee-joint, a thickening of the wrists and ankles, and a spindling of the fingers. General physical examination otherwise revealed no significant abnormality, but he developed a Pel-Ebstein type pyrexia towards the end of his period of observation.

Investigations.—E.S.R., 36 mm. in one hour. Complete blood count and differential count were within normal limits. The W.R. was negative. The Mantoux reaction was positive at 1/1,000. Sputum was negative for tubercle bacilli, and culture showed no significant finding. Fluid from the knee was sterile, no malignant cells or tubercle bacilli being seen. A biopsy specimen from the cervical gland revealed Hodgkin's disease. *X*-ray examination of the chest showed mediastinal adenitis, and that of the hands, feet, and elbows gross pulmonary hypertrophic osteoarthropathy. The plates showed clearly the marked macroscopic and radiological changes attendant on his pulmonary hypertrophic osteoarthropathy, extending an appreciable distance up the shaft of the long bones.

The patient has since developed a secondary deposit in the right orbit, but this and other groups of enlarged glands are responding satisfactorily to deep *x*-ray therapy.

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B. S. LEWIS, *D.S.C.*, M.R.C.S.,
Surgeon Commander, R.N.

Reviews

HEALTH OF THE AGEING

The Health of the Elderly at Home. A Medical, Social, and Dietary Study of Elderly People Living at Home in Sheffield. By William Hobson, B.Sc., M.D., D.P.H., and John Pemberton, M.D., M.R.C.P., with four collaborators. Foreword by Lord Horder, G.C.V.O., M.D., F.R.C.P. (Pp. 238+xvi; illustrated. 30s.) London: Butterworth and Co., Ltd. 1955.

With the steadily increasing numbers of elderly persons in the community the subject "The Health of the Elderly at Home" must arouse great interest and will be welcomed by all general practitioners, much of whose work is now with the elderly. This excellent piece of work undertaken with so much detail in the homes of a group of old persons in Sheffield has shown some fascinating results and opened up many new fields of thought. The balance between clinical and social aspects has been well maintained, and there has been throughout the study a real appreciation of the need to integrate clinical with social findings. It is refreshing to note too that the important subject of diet has been included and extremely well studied. Those in the profession who are working with older persons in their own homes cannot afford to miss reading this book, and many will wish to keep it for reference.

The chapters dealing with different systems are well arranged and amply illustrated with tables. The sections on cardiovascular disease and on high blood pressure are both excellent, and the reference to associated conditions is interesting and well worth studying.

The value of this book lies in the fact that the conclusions are all based on factual data, and these are clearly and concisely reported and briefly discussed. The findings relate in an interesting way to those reported in the Wolverhampton survey undertaken by Sheldon in 1947. "Quantitative assessments of physical disablement" and "Employment, retirement, and health" are subjects which add considerably to the interest of the work and are most appropriate to the times.

The final conclusions are well prepared and valuable for reference. General practitioners will particularly enjoy reading this book, which is so easily and concisely written and so well illustrated by case notes and tables.

MARJORY WARREN.

A STUDENT'S GYNAECOLOGY

Textbook of Gynaecology for Students and Practitioners. By James Young, D.S.O., M.D., F.R.C.S.Ed., F.R.C.O.G. Ninth edition. (Pp. 493+xi; illustrated. 40s.) London: Adam and Charles Black. 1954.

Although not so old in years, this is a companion volume to the well-known *Textbook of Midwifery* by Johnstone and Kellar, and it is similar in format, size, and comprehensiveness. The quality of the paper, the rather small type, and the limitation of the number of illustrations all make it easy on the pocket if hard on the eye, yet those who do not put too much store by superficial glamour will find that it has sterling qualities. This edition contains new material in the sections dealing with endocrinology, menstrual disorders, prolapse, and tumours. In view of the present-day student's requirements the chapter on operative surgery is purposely made short, so short that nothing would be lost if it were sacrificed in favour of more information about the common day-to-day problems facing the general practitioner.

The arrangement of the book is unusual in that chapters on symptoms and symptom complexes precede those giving a systematic account of diseases, while embryology appears towards the end. There is only one serious criticism, however, and that is the dismissal of vaginitis in a short paragraph as an unimportant, if not rare, disease. Against this must be set courageous and logical descriptions of difficult subjects such as subinvolution, metritis, endometritis, and pelvic pain. Some of the illustrations are of high quality, but there are still several old drawings which do not measure up to modern standards. One of these (Fig. 108), which depicts vulval warts, suffers by comparison with Fig. 141, which is a first-class clinical photograph of the same condition. In appearance the book has not yet completely shed its 1921 fashions. Nevertheless its text justifies its being described as one of the best gynaecological textbooks for students published in this country.

T. N. A. JEFFCOATE.

ANIMAL DISEASES TRANSMISSIBLE TO MAN

Diseases Transmitted from Animals to Man. By Thomas G. Hull, Ph.D., with 25 contributors. 4th edition. (Pp. 717+xx; illustrated. 90s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1955.

It is 25 years since the first edition of this book appeared, and during that time it has established itself as a reliable guide to work on the frontiers between medicine and veterinary science. This is an important field, not only for public-health, veterinary, and sanitary workers, but also for the physician, and particularly the physician in the Tropics. It is an expanding field, as is evidenced by the fact that since the first edition of the book appeared more than 20 diseases occurring in animals and transmitted to man have been described and have now been incorporated in the volume. Diseases discussed in this edition but not in the last include listerosis, lymphatic choriomeningitis, jungle yellow fever, coccidioidomycosis, and several arthropod-borne encephalitides. Their inclusion is welcome, although belated in the case of the first four, which could have and should have been included in the 1947 edition. There are other diseases which should be included, and serious omissions are the African and South American trypanosomiases and the human tapeworm infections, to which only passing reference is made.

The sections relating to epidemiology and history are good, and for these alone the book is worth its place on the shelves of medical and veterinary workers. Descriptions of the clinical features and methods of diagnosis in man and animals are, however, often in themselves sketchy. Nevertheless, if in places one thinks that there is insufficient to satisfy workers in either field, one is invariably left with a sense of satisfaction at having had features in man and animals brought together for comparing and contrasting.

It would be invidious to single out individual contributors, of whom there are 25. The standard is well maintained throughout and there are 104 good photographs and diagrams.

A. W. WOODRUFF.

AMERICAN VIEWS ON THERAPEUTICS

Current Therapy, 1955. Latest Approved Methods of Treatment for the Practising Physician. Edited by Howard F. Conn, M.D. (Pp. 692+xxx. 77s.) Philadelphia and London: W. B. Saunders Company. 1955.

This volume of an annual series on current views of therapeutics must represent a wide cross-section of American medical opinion. There are no fewer than twelve consultants and well over 200 contributors of monographs. A work of this kind is clearly intended for reference and provides condensed advice in a didactic manner. In some sections there seems to be a lack of discrimination in the choice of drugs, many being listed unaccompanied by guidance. If unusual observations or conclusions are to be contained in such a work they should be sufficiently amplified to satisfy the student. For instance, under varicose veins we read "that certain edemas are primarily due to a deficiency or an absence of gastric hydrochloric acid and at times of pepsin also. . . ." Such bald statements do not enhance the value of the book. The British work on the use of antacid slowly dissolving tablets in the treatment of peptic ulcer appears to have escaped notice. In the treatment of uncomplicated duodenal ulcer antacid preparations are dismissed with the statement that they are occasionally advised between meals and at bedtime, or for distress in the occasional patient not

promptly relieved of symptoms while taking an anticholinergic drug. Rheumatoid arthritis vaccine can, it seems, be continued for years without reaction or any detectable harm. It would be helpful to have some evidence of efficacy presented.

Much industry has gone into the preparation of this book.

A. H. DOUTHWAITE.

PRE- AND POST-NATAL LIFE

The Mammalian Fetus: Physiological Aspects of Development. Cold Spring Harbor Symposia on Quantitative Biology, Volume XIX. (Pp. 225+xii; illustrated. $8.) New York: Biological Laboratory, Cold Spring Harbor. 1954.

This book records the papers read and discussions held at a meeting of laboratory workers and clinicians of different countries, all of whom share a common interest in pre- and post-natal life. The symposium itself, which was one of a distinguished series, represents a type of scientific meeting which is too rare in this country, when workers of different disciplines but one common interest not only meet together for discussion but also live together long enough to understand the details of the different aspects of their common problem.

The general production of the book is excellent, though it suffers a little from a disparity in the standard of the illustrations, and in a few places there are printer's errors which make the text a little puzzling. However, these are a small price to pay for the advantage of having within the covers of one book a series of papers which take us from the ovum to the newborn mammal (or infant) and are still largely up to date and give us references to much of the most recent literature. It is of particular interest to note that almost all the contributors are aware that they are only on the fringe of their subject. We are free here from the arid raking over of the ashes of old controversies, and the general spirit of the approach suggests, as it should, vitality. It would be invidious to pick out particular papers, but some are excellent and full of ideas.

This book should be read by both laboratory workers and clinicians interested in this field. In particular it should be read by those who feel that obstetrics presents only a few simple problems in mechanics which are already mainly solved.

K. W. CROSS.

SEXUAL CONSTITUTION

Sexuelle Konstitution. Psychopathie, Kriminalität, Genie. By Dr. Helene Stourzh-Anderle. (Pp. 262+ix. $6.25.) Wien: Wilhelm Maudrich. 1955.

This volume on sexual constitution inaugurates a new series of publications: the Viennese Contributions to Sexual Research. The author outlines 72 previous attempts to establish constitutional types, but, undismayed, she adds yet another typological system for which she claims special advantages. In the fabric of her theory are interwoven three main conceptual strands in many combinations and patterns: (*a*) "intersexuality"—indicating the bisexual genetic components in physical and psychological personality traits; (*b*) "subsexuality"—indicating the degree of sexual immaturity and infantilism; and (*c*) "free-floating sexual energy"—indicating that portion of bisexual endowment which runs counter to the dominantly manifested sexual trends. The last factor may become responsible for sexual perversions, or it may assist in creating a deviant personality, of which there are three main types: the personality of the neurotic, the criminal, and the creative genius. Sexual constitution, thus conceived, becomes all-explanatory.

The author is aware how vain the endeavour is to fit the manifold nuances of individual differences into a few stereotyped Procrustean beds. Yet her desire to typify is hardly tempered by such awareness. In an appendix of sexual biographies the giants of world literature are mutilated almost beyond recognition in order to present them as types. Göethe is characterized as sexually weak, as a decidedly feminine genius; and Shakespeare is just a "homosexual misogynist." Yet these diagnoses are perfectly in line with the author's description of the type of "intersexual (feminine) man," which ends categorically and dogmatically like this: "When in a letter or in an essay every second sentence begins with 'I,' when each conversation starts with 'I,' and, even more, when in the title of a book the possessive pronoun 'My . . .' appears, then the diagnosis of the femininity of the author is as good as established."

Yet in spite of these shortcomings of the main thesis the book offers much instruction and stimulating thought. The author is a woman of great erudition who freely mentions the observations and theories of many scientists working in diverse fields of research ranging from biology and ethology to endocrinology and psychiatry. She is equally well acquainted with the writings of poets, novelists, and playwrights, and elaborates her theme by many apt quotations from them. Her list of references contains over 800 items. It would have been helpful if the publishers had provided an index.

F. K. TAYLOR.

SOCIAL SCIENCE EXAMINES THE ENGLISH

English Social Differences. By T. H. Pear, M.A., B.Sc. (Pp. 318. 18s.) London: George Allen and Unwin Ltd. 1955.

Professor Pear, who writes this natural history of the English social scene in the twentieth century, is an Englishman, like ourselves; so that if we are queasy he is also a little sick, and if we do not see straight he must needs squint a little. If Margaret Read writes a report on the Sandwich Islanders, she describes objectively a culture she does not share and documents it for those who have no first-hand experience of it. Professor Pear realizes the difficulty of objective reportage, and therefore quotes extensively from the observations of others, and in order that the reader may judge his impartiality he includes a statement of his own prejudices in a summary. Even here he finds it difficult to lay aside his judicial robes, and at the end of a long discussion of the influence of public schools it is impossible both for him and for us to conclude whether his private opinion is for or against.

History-taking is not strictly an expression either of art or of science; it is compounded of some of the qualities of both. Here again Professor Pear is in difficulty, for while discarding the help of the novelist he seldom achieves an exact measurement of social differences. One of the few exceptions to this last comment is the result of an inquiry addressed to her Majesty's judges, given as an example of a powerful élite in this country. Of the 74 judges who replied, 74% stated that they had been educated at public schools, 15% at grammar schools, and 7% at secondary schools. Access to a powerful élite depends, then, neither on economic status nor on social stratum. Another example of an élite is taken from our own profession—the Medical Research Council, whose function is to advise the Lord President of the Council. The stratification within the medical profession is also described, and our author concludes this paragraph with the sentence: "Yet there are 'ceilings' to the usefulness of such a reputation for, as Margaret Cole remarks, though elevation to a knighthood usually helps a specialist, to become a peer may be costly, since nowadays few patients believe that they can afford to be medically attended by a Lord." This quotation illustrates not only the impercipience of some of the comment but also the inelegance of much of the writing. One last complaint: why in a book on English social differences is there no reference to the influence of the monarchy?

Although this short review has emphasized little more than the difficulties inherent in such a study, this book is indeed full of accurate observation and careful research. The publishers have thoughtfully provided for the hasty reviewer a few gossipy extracts, such as "P. 113, Is the Admiralty opposed to provincial accents?" and "P. 146, Is the napkin-ring a mark of the middle-class?" These suggested head-lines hardly do justice to Professor Pear's hope that his book may make a contribution to the "understanding" (*verstehende*) type of psychology. We can assure him that it does.

D. V. HUBBLE.

BRITISH MEDICAL JOURNAL
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CANCER OF BUCCAL CAVITY

In recent years major advances have been made in both what Sir Ernest Kennaway describes as the fundamental and empirical sections of cancer research.[1] But until the metabolic distinction between normal and cancerous cell division is fully understood it is likely that the empirical (or epidemiological) section will provide the greater practical opportunity for prevention of the disease. A notable example has recently been provided by L. D. Sanghvi, K. C. M. Rao, and V. R. Khanolkar,[2] who studied the aetiology of cancer of the buccal cavity. In Britain cancer of this site is becoming rather rare, but in India the buccal cavity is one of the commonest sites of cancer, and it accounts for 36% of all cancers seen at the Tata Memorial Hospital, Bombay. It has long been suspected that this great prevalence might be due in part to the habit of chewing betel and tobacco, and this has been supported by the observation that cancer of the inner lining of the cheek was commoner among the Deccani Hindus, many of whom chew, than among the Gujerati Hindus, who typically smoke hand-made "bidis." But there was no direct evidence of a relationship until Sanghvi, Rao, and Khanolkar studied the habits of 1,460 patients attending the Indian Cancer Research Centre, Bombay, during the years 1952–4. They found that the proportion of patients who chewed or smoked, or did both, was appreciably higher among patients with cancer arising in the upper alimentary tract of either sex than among patients with cancer arising elsewhere or patients free of cancer altogether. Cases in women were too few for any fuller analysis, but the male cases could be standardized for three age and four community groups. These investigators then found that the habit of chewing was associated only with cancer of the buccal mucosa and of other parts of the oral cavity (principally the alveolus, anterior part of the tongue, and palate), that the combination of smoking and chewing was associated with cancer of the base of the tongue and hypopharynx, and that smoking was associated with cancer of the oropharynx (principally cancer of the tonsils) and—to a lesser extent—cancer of the oesophagus. The average number of bidis smoked per day was higher in patients with cancer of the hypopharynx, oropharynx, or base of the tongue.

These findings satisfactorily account for a greater prevalence of cancer of the buccal mucosa among Deccani Hindus, and of cancer of the base of the tongue among Gujerati Hindus, and also for a greater prevalence of cancer of both sites among men than women. But they raise almost as many problems as they solve.

First, is it to be supposed that there is a chemical carcinogen in the substances which are chewed, or may cancer be produced by the oft-repeated minor traumata associated with chewing? The fact that the quid contains tobacco (in addition to betel nut and leaf, which in some parts are prepared with slaked lime, catechu, and spices) does not provide any ready explanation of the effect. The presence of 3:4-benzpyrene in tobacco smoke is believed to be the result of the combustion of tobacco and it is not likely to be present in the natural or cured leaf. Secondly, why is it that smoking bidis should be associated with cancers arising in the upper alimentary tract whereas the smoking of cigarettes of American and European type is associated with cancer of the bronchus? Sanghvi, Rao, and Khanolkar suggest that the explanation may lie in racial differences in tissue susceptibility, and they recall an experiment of L. C. Strong and L. D. Sanghvi.[3] Mice with the longest induction period following the injection of a chemical carcinogen were selected for breeding, when it was found that after sixteen generations the total incidence of cancer was not appreciably affected, but the distribution of sites was entirely altered. The results of this experiment recall an observation which has often been made about human cancer. Twenty-five years ago it was stated by W. Cramer[4] in the form of a law of nature.

"There appears," he wrote, "to be a general law that when in a given population the incidence of cancer in one particular organ is markedly increased as compared with another population, there is then a compensating decrease in the incidence of cancers in a number of other organs. As a result, the incidence of cancer in different populations, whether of the same sex or not, may represent a very different distribution over the various organs or tissues, but the sum total—the total incidence of cancer—remains on an even level."

[1] Kennaway, E., *British Medical Journal*, 1955, **1**, 1107.
[2] Sanghvi, L. D., *et al.*, ibid., 1955, **1**, 1111.
[3] Strong, L. C., and Sanghvi, L. D., *Z. Krebsforsch.*, 1951, **58**, 1.
[4] Cramer, W., ibid., 1931, **34**, 531.
[5] Dungal, N., *Ann. roy. Coll. Surg. Engl.*, 1955, **16**, 211.
[6] Case, R. A. M., *et al.*, *Brit. J. industr. Med.*, 1954, **11**, 75.
[7] Doll, R., ibid., 1955, **12**, 81.
[8] —— ibid., 1952, **9**, 180.
[9] Case, R. A. M., and Lea, A. J., *Brit. J. prev. soc. Med.*, 1955, **9**, 62.
[10] Sadowsky, D. A., *et al.*, *J. nat. Cancer Inst.*, 1953, **13**, 1237.
[11] Hammond, E. C., and Horn, D., *J. Amer. med. Ass.*, 1954, **155**, 1316.

This "law," if true, is clearly of the greatest importance, for it implies that efforts directed to the eradication of a particular type of cancer, by removing the environmental factors which give rise to it, are likely to be unavailing so long as the underlying "systemic" factors remain. A new and striking illustration of the type of evidence from which Cramer deduced his "law" has been provided by N. Dungal's study of cancer in Iceland.[5] According to national mortality data the total mortality from cancer in Iceland for the ten years 1940–9 was 1,480 per million, whereas for a slightly older population in England and Wales in 1944–5 it was 1,709 per million. But, of the total male deaths in Iceland, 45% were ascribed to cancer of the stomach, 3% to cancer of the lung, and 2% to cancer of the rectum, whereas in England and Wales the proportions were, respectively, 21%, 16%, and 11%. Such evidence, however, is far from conclusive, and other evidence derived principally from studies of industrial cancer is contradictory. R. A. M. Case and his co-workers, for example, found that the incidence of cancer of the bladder among chemical workers exposed to β-naphthylamine was between two and three times greater than the total incidence of cancer of all sites experienced by other men in England and Wales[6]; and R. Doll found an increased incidence of cancer of the lung among asbestos workers[7] and among gasworkers,[8] while the mortality from cancer of other sites among them was close to the normal mortality estimated from national mortality data. Another example outside the industrial field is provided by the data of Case and Lea,[9] who found that among soldiers pensioned for bronchitis the mortality from lung cancer was doubled, while mortality from other types of cancer was unaltered.

These and other similar data demonstrate the falsity of Cramer's hypothesis and conversely lend support to the belief that the reason for variations in cancer incidence should be looked for, in the first place, in the environment. In accordance with this principle Sanghvi, Rao, and Khanolkar suggest another possible explanation of the paradox to which their work has drawn attention. Instead of postulating racial differences in tissue susceptibility to account for the appearance of cancer of the upper alimentary tract among Hindus who smoke and cancer of the bronchi among Europeans who smoke, the possibility may be considered that the physical state and dispersal within the upper respiratory and alimentary tracts of the smoke particles from bidis may differ from that of cigarettes of American and European type. To suggest that this is so is in fact no more than to suggest that bidis resemble in their effects cigars rather than cigarettes. Both retrospective[10] and prospective[11] studies have indicated that cigar smoking is not associated with bronchial cancer, though it is associated with cancer of some other sites.

IRRITANT ACTION OF ASPIRIN ON STOMACH

The liability of aspirin to cause indigestion in the form of heartburn, epigastric burning, pain, nausea, and even vomiting was recognized by the layman within a few years of its coming into general use. Nevertheless until 1938 the teaching of pharmacologists was that it passed through the stomach unchanged and produced no local effect on the mucosa. In that year the view was challenged by A. H. Douthwaite,[1] who suspected aspirin was a cause of melaena. Subsequent gastroscopic observations by Douthwaite and G. A. M. Lintott[2] revealed that aspirin particles could produce an inflammatory reaction in the stomach in 13 out of 16 subjects. The response was limited to the lesser curvature and varied from hyperaemia to haemorrhage. The interest aroused was immediate and widespread and prompted the development of aspirin preparations which could be dispersed as minute particles or dissolved. The gastroscopic findings came as no surprise to clinicians or pathologists, because it was well known that extensive gastric haemorrhages and erosions were found in cases of suicide with aspirin. Five years later W. D. Paul[3] challenged these findings, and wrote that out of 1,000 gastroscopies carried out to investigate aspirin action no gastric response was seen. In the same year S. Wolf and H. G. Wolff[4] failed to produce any aspirin reaction on the mucosa of the gastric fistula of their subject Tom.

The discrepancy between the British and American workers was more apparent than real. Thus Tom had had his fistula for 47 years: it is not surprising that the mucosa was resistant to the relatively mild effect of aspirin as compared with mustard. Furthermore, the part of his stomach visible was the anterior portion of the greater curve. Paul's work again is not comparable, because he found the tablets in or near the mucous lake. Douthwaite and Lintott, on the other hand, showed that it was only on the lesser curvature that reaction was to be expected. It is to be noted also that they aspirated the stomach before gastroscopy, and thus deprived the organ of much of its protective mucus. The matter was carried further by gastroscopic observations[5] under conditions more

[1] Douthwaite, A. H., *British Medical Journal*, 1938, **1**, 1143.
[2] —— and Lintott, G. A. M., *Lancet*, 1938, **2**, 1222.
[3] Paul, W. D., *J. Iowa St. med. Soc.*, 1943, **33**, 155.
[4] Wolf, S., and Wolff, H. G., *Human Gastric Function*, 1943, London.
[5] Douthwaite, A. H., *Lancet*, 1954, **2**, 917.

closely approximating to those of Paul. The stomach was not emptied of its resting juice; yet of 37 patients (6 with gastric ulcer, the remainder with normal stomachs) a flare-reaction was seen in 17 of the 28 in whom aspirin particles could be recognized.

Impressive confirmation of the potential dangers of insoluble aspirin has now been provided by the extensive and carefully controlled experiments of Drs. A. Muir and I. A. Cossar, reported at p. 7 of the *Journal* this week. By observation of blood in fractional test meals after administration of aspirin, and direct examination of the stomach in patients who received aspirin two hours before the operation, they proved a high incidence of gastric irritation. The specimens removed at operation showed erosive gastritis in 12 out of 20 cases after ordinary aspirin and 2 out of 20 after soluble aspirin. Clinical observations on 318 patients suffering from peptic ulcer revealed that 110 risked dyspepsia, usually heartburn, from its use. There was also suggestive evidence that it was responsible for certain ulcer relapses and haemorrhage.

It is clear that the earlier work has been confirmed, and care is evidently needed in the administration of aspirin. Fortunately there are now several preparations available which are free of risk except to an exceptionally sensitive person. Certainly insoluble tablets should never be swallowed as such. To grind them finely makes them less dangerous, especially if taken after food or in milk. Calcium aspirin, which is soluble, is excellent and rarely causes gastric irritation if given well diluted. A newcomer to this field is aspirin-glycine. The physical association of drugs is such that they quickly disperse in the mouth even though not taken with a draught of water. No trace of their presence or of irritant action can be observed gastroscopically[5] and indigestion from their use has not been recorded in fifty consecutive cases. When only ordinary aspirin is available it should be given after food, preferably with milk, and always in powder form, but the more soluble forms are to be preferred.

AGAMMAGLOBULINAEMIA

Circulating antibodies are found mainly in the gamma-globulin fraction of the plasma proteins, and an absence or a marked reduction of this fraction may be associated with a decrease in antibodies and a heightened susceptibility to infection. As a clinical entity—as distinct from a pathological curiosity—agammaglobulinaemia passed unnoticed until 1952, but now, largely owing to the greater use of improved techniques for studying the plasma proteins, there is evidence that a total absence or a reduction in gamma-globulin may occur as a primary congenital disease or be acquired secondarily to some other condition.

Since O. C. Bruton's original description in 1952, other cases of primary agammaglobulinaemia have been reported in the United States, Great Britain, and Europe.[1–9] The disease is found in male infants and children—the defect being inherited as a sex-linked recessive Mendelian trait. The clinical picture is of recurring infections with common pyogenic bacteria, manifested by intractable diarrhoea, pyoderma, purulent conjunctivitis, otitis media, purulent sinusitis, bronchitis, bronchopneumonia, meningitis, or infective arthritis. Although each infection may respond to antibiotics the child soon succumbs to another attack with the same or a different organism, and permanent damage, such as hydrocephalus following meningitis or bronchiectasis following bronchopneumonia, may ensue. The condition should be suspected if a male child has repeated pyogenic infections, and confirmed by electrophoretic analysis of the plasma proteins. The defect lies in a congenital inability to synthesize gamma-globulin antibodies and may be associated with atrophy of the lymphoid tissue. Studies with isotope-labelled gamma-globulins have not shown that these proteins are destroyed at an unusually rapid rate.[3] The inability to form antibodies is also indicated by the absence of isohaemagglutinins and by failure of a challenging antigen to induce an antibody response: for example, diphtheria toxoid injections do not convert a positive Schick test to negative. No doubt before the days of antibodies many of these children died young. Now each episode of infection can be controlled, and there is evidence that relapses can be prevented by giving monthly injections of gamma-globulin, 0.3 ml. per lb. body weight (0.7 ml. per kg. body weight). This replacement therapy should not be delayed lest permanent damage result from the repeated infections.

Absence or a marked reduction of gamma-globulins may also result from a variety of other diseases affect-

[1] Bruton, O. C., *Pediatrics*, 1952, **9**, 722.
[2] —— *et al.*, *Amer. J. Dis. Child.*, 1952, **84**, 632.
[3] Jean, R., *Presse med.*, 1953, **61**, 828.
[4] Good, R. P., *J. Soc. Pediat. Res.*, 1954, **2**, 3.
[5] Craig, J. M., *et al.*, ibid., 1954, **24**, 4.
[6] Janeway, C. A., *et al.*, *Trans. Ass. Amer. Phys.*, 1953, **66**, 200.
[7] Moncke, C., *Schweiz. med. Wschr.*, 1954, **84**, 1033.
[8] Lang, N., *et al.*, *Klin. Wschr.*, 1954, **32**, 856.
[9] See *British Medical Journal*, 1954, **2**, 976.
[10] Krebs, E. G., *J. Lab. clin. Med.*, 1946, **31**, 85.
[11] Schick, B., and Greenbaum, J. W., *J. Pediat.*, 1945, **27**, 241.
[12] Wyngaarden, J. B., *et al.*, *Pediatrics*, 1952, **9**, 729.
[13] Stern, K. G., and Reiner, M., *Yale J. Biol. Med.*, 1946, **19**, 67.
[14] Martin, N. H., *Lancet*, 1954, **2**, 1094.
[15] Arends, T., *et al.*, *Amer. J. Med.*, 1954, **16**, 833.
[16] McFarlane, A. S., *et al.*, *J. Path. Bact.*, 1952, **64**, 335.
[17] Prasad, A. S., and Koza, D. W., *Ann. intern. Med.*, 1954, **41**, 629.
[18] Young, I. I., and Wolfson, W. Q., *Clin. Res. Proc.*, 1954, **2**, 101.
[19] Sanford, J. P., *et al.*, *New Engl. J. Med.*, 1954, **250**, 1027.
[20] Grant, G. H., and Wallace, W. D., *Lancet*, 1954, **2**, 671.
[21] Collins, H. D., and Dudley, H. R., *New Engl. J. Med.*, 1955, **252**, 255.
[22] Zinneman, H. H., *et al.*, *J. Amer. med. Ass.*, 1954, **156**, 1390.
[23] Seltzer, G., *et al.*, *New Engl. J. Med.*, 1955, **252**, 252.
[24] Laurance, B., *Lancet*, 1954, **2**, 872.

ing adults of either sex. It is found in nutritional hypoproteinaemia,[10] the nephrotic syndrome, and idiopathic hypoproteinaemia[11 12]—conditions which can be distinguished from primary congenital agammaglobulinaemia by oedema, low total plasma proteins, proteinuria, or evidence of disturbed liver function. These cases are not necessarily associated with increased susceptibility to infection,[11 13] and Martin[11] suggests that a deficiency of the sub-fraction, gamma$_2$-globulin, is required to interfere with antibody formation. A reduction in the gamma-globulin fraction may also be associated with diseases of the reticulo-endothelial system such as malignant lymphoma,[15] leukaemia, multiple myelomatosis, and allied conditions,[16] and has been observed in one patient with anaemia and leucopenia who was cured by splenectomy.[17]

Other cases, in adults of either sex, are more difficult to classify. The clinical picture of repeated respiratory infections (one patient had more than 36 attacks of pneumonia) and recurring bronchiectasis resembles congenital agammaglobulinaemia, and yet there was no outstanding ill-health in childhood and the condition appears only later in life.[18–23] These seem to be cases of acquired agammaglobulinaemia, but as yet no clue to the underlying cause has appeared, though in two patients sarcoidosis[22] and histoplasmosis[23] have been suspected of depressing antibody synthesis. In these acquired cases antibiotics are the sheet-anchor of treatment, but some benefit has also been claimed from replacement therapy with injected gamma-globulins.

Thus congenital idiopathic agammaglobulinaemia appears to be a distinct, though rare, entity. Whether lesser degrees of this condition exist remains to be shown, but the factors concerned in increased susceptibility to infection are many and little understood; certainly some children have recurring infections without any biochemical evidence of agammaglobulinaemia.[24] Secondary agammaglobulinaemia occurs in a variety of diseases, but the idiopathic acquired type, resembling the congenital variety but not becoming manifest until adult life, requires further elucidation: it may prove to be secondary to some disease of the reticulo-endothelial system.

NEW LEADS IN CHEMOTHERAPY OF TUBERCULOSIS

The synthetic detergents which relentlessly pursue their monosyllabic invasion of our homes have lately infiltrated into the domain of chemotherapy, where a notable success in the treatment of experimental tuberculosis has been scored by "triton A20" and some of its myriad progeny. Triton A20 is a 25% solution of an aryalkyl polyether of phenol, and differs from other detergents in that it is non-ionic. When injected into animals intravenously it produces a rise of blood cholesterol, and it was used by J. W. Cornforth and his colleagues[1] to study the effect of lipaemia on the course of experimental tuberculosis in mice. Somewhat to their surprise it greatly suppressed the infection, though it showed no *in vitro* activity and had even been used by some workers as a dispersing agent to improve the growth of tubercle bacilli in fluid cultures. Triton A20 was too toxic for therapeutic use, however, and a number of analogues were therefore prepared and tested.[2] A polymer of *p-tert*-octylphenol of short and variable chain length was prepared by condensation with formaldehyde, and the product was then condensed with ethylene oxide which formed polymerized side chains. The product of this, D2, was as active as triton A20. Mice infected with the tubercle bacillus intravenously and given four injections of 25 mg. of D2 by the same route showed only slight lesions in the lungs after 34 days, by which time the control mice had all died. D2 also caused some degree of regression and healing in guinea-pigs with an established tuberculous infection, its activity being of the same order as that of streptomycin. But tests for chronic toxicity showed that the compound caused liver damage when given in therapeutic doses. An investigation of the part played by the side chains showed that the number of ethylene oxide units contained in them was of critical importance. When the length ranged from 15 to 20 units activity was maximal and was equivalent to 2 mg. streptomycin daily in the mouse test; above 20 units activity was lost, and above 45 units a pro-tuberculous effect appeared. This change in activity was correlated with the change in the ratio of lipophilic to hydrophilic groups in the molecule. The association of anti-tuberculous activity with the property of producing lipaemia, which led to the trial of triton A20, was evidently fortuitous, since some of the more active analogues produced no disturbance of lipid metabolism; it was further found that lipaemia produced by feeding cholesterol conferred no protection against tuberculosis.

From the lack of activity against tubercle bacilli *in vitro* it is inferred that the new compounds act by changing the behaviour of the host towards the invader. A clue to the underlying mechanism may lie in the observation of G. B. Mackaness[3] that monocytes obtained from animals dosed with a relative of triton A20 had undergone some alteration in properties, since tubercle bacilli ingested by them were inhibited or even destroyed. The activity of the compounds is probably dependent upon their surface-active properties, and may be physical rather than chemical; in this connexion it would be of interest to know whether they have the ability to penetrate caseous tissue.

The future development of this promising class of anti-tuberculous agents will be awaited with interest. But for the use of animal tests triton A20 and its descendants would not have been discovered, and it is a matter for

[1] Cornforth, J. W., *et al.*, *Nature*, 1951, **168**, 150.
[2] —— *et al.*, *Brit. J. Pharmacol.*, 1955, **10**, 73.
[3] Mackaness, G. B., *Amer. Rev. Tuberc.*, 1954, **69**, 690.

speculation how many active compounds have been overlooked in the past through dependence upon *in vitro* tests for screening purposes.

THE STUDENT'S VIEW

Sometimes in high-level talks everybody is consulted except the people most concerned. The Minister of Health has gone to work the other way. Last November, addressing the British Medical Students' Association, he invited them to give their considered views on the working of the Medical Act, 1950, which inaugurated the pre-registration year. Sufficient experience of the regulations under that Act has accumulated since they came into force on New Year's Day, 1953, to justify collation and examination. Accordingly the B.M.S.A. sought the views of the student body in all the schools of Great Britain and Northern Ireland and has drawn up a memorial for presentation to the Minister.

Medical students as a whole have accepted the regulations as a matter of course in the stride towards their career. The regulations only made compulsory what had hitherto been customary, for it has long been usual for newly qualified doctors to hold at least one resident hospital appointment before entering independent practice. But students are averse from any prolongation of the period, which has been suggested in some quarters. The pre-registration period is an addition to an already long curriculum, and any edict that doctors should not enter general practice until they have had two or more years' hospital experience would cause dismay.

Difficulty is experienced in some regions in obtaining pre-registration appointments—not, usually, the first appointment, which is made without avoidable delay, but the second appointment. For this they may have to wait a couple of months or more, instead of obtaining it automatically, as others do, after completing the first. The delay could be avoided to a large extent if all medical schools, in co-operation with hospital boards, were to follow the progress of their own graduates, advising them when to begin to make application and suggesting suitable posts. This throws a heavy task on the deans, and it is not always easy for the dean to follow the progress of his own graduates. The dean of one large medical school in London, for example, says that he is able to follow his graduates who qualify with the London degree, but those who qualify with Oxford or Cambridge degrees or with the diploma of the Conjoint Board have to be signed up by their various registrars and contact with the dean is easily lost. This dean would like to sign up all his graduates for their house appointments, and that seems the most sensible course.

Complaints are received that approved hospital posts are sometimes given to fully registered doctors, which may account for the fact that greater difficulty is experienced in getting house-physician and midwifery posts than house-surgeon posts. Students naturally feel that unless the number of posts available is greatly in excess of the number of students qualifying it is unfair that in fulfilling his legal obligations the new doctor should have to compete with more experienced men. Another criticism is that in some approved posts too much time is absorbed in routine administrative duties, so that full advantage cannot be taken of the clinical experience available. The suggestion is made that experience as house-surgeon is of full value only to those intending to practise surgery, and that instead of a surgical appointment there should be an option of appointments which combine two specialties. Yet another criticism is that some hospitals make a practice of appointing only two house officers to do the work for which three posts are established. Altogether the memorial is a well-reasoned and responsible document which deserves the consideration it will no doubt receive in the Ministry.

ENZYMES AND ARTERIOSCLEROSIS

In 1938 J. Baló, of Szeged in Hungary, published his findings on experimental arteriosclerosis produced by ammonium hydroxide or acid intoxication.[1] He ascribed the changes in the tunica elastica to a secondary acidosis following the administration of these reagents. Since then, and more especially since 1949 while working with his wife, I. Banga, at the First Department of Pathological Anatomy and Cancer Research of the Medical University, Budapest, he has followed up these earlier observations, basing his work on the contention that an early and important factor in the production of the arteriosclerotic lesion is an alteration in the elastin of the arterial media.

The emphasis of their work has changed, however, since their discovery in 1949 of an enzyme in pancreatic extracts that could dissolve elastic tissue.[2,3] Hitherto, the only biological processes by which this particularly intractable material could be dissolved were operated by certain micro-organisms; these were catholic in their attack, and no one had succeeded in preparing a pure enzyme. The pancreatic enzyme, to which Baló and Banga gave the name elastase, was shown to be different from trypsin and chymotrypsin in that little cleavage of main protein chains occurred in the early stages of the attack. Banga, obviously stimulated by the findings of her fellow countryman, Szent Györgyi, on the structure of muscle protein, visualized elastin as being a fibrous polymer of globular particles, and elastase as an enzyme capable of bringing about the depolymerization of this structure.[4] Her views have since been modified[5] in accordance with the views of other workers that the elastin molecule is probably stabilized by a carbohydrate fraction, and is not a simple protein polymer.[6]

Following up their hypothesis that this enzymatic reaction was one of the basic processes of arterial degeneration, Baló and Banga showed the presence of a

[1] Baló, J., *Frankfurt. Z. Path.*, 1938, **52**, 205.
[2] —— and Banga, I., *Schweiz. Z. Path. Bakt.*, 1949, **12**, 350.
[3] —— —— *Biochem. J.*, 1950, **46**, 384.
[4] Banga, I., *Z. Vitamin-, Hormon- u. Fermentforsch.*, 1951, **4**, 49.
[5] —— and Schuler, D., *Acta physiol. Acad. Sci. hung.*, 1953, **4**, 13.
[6] Hall, D. A., *et al.*, *Nature* (*Lond.*), 1952, **170**, 264.
[7] Baló, J., and Banga, I., ibid., 1949, **164**, 491.
[8] Banga, I., and Baló, J., *Kisérl. Orvostud.*, 1950, **2**, 271.
[9] —— —— *Nature* (*Lond.*), 1953, **171**, 44.
[10] Baló, J., and Banga, I., *Acta physiol. Acad. Sci. hung.*, 1953, **4**, 187.
[11] Hall, D. A., *et al.*, *Exp. Cell. Res.*, 1955, **8**, 35.
[12] Lansing, A. I., *et al.*, *Anat. Rec.*, 1952, **114**, 555.

circulating inhibitor for the enzyme in serum,[7] and to this they ascribed the normal control of the activity of the enzyme. They also described a further inhibitor which could be removed by acid treatment or by dialysis and was present in the pancreas itself.[8] They claimed that the circulating inhibitor is almost absent in the serum of arteriosclerotics and ascribed the onset of the lesion to the lowering of control which the lack of inhibitor brings about. They have since shown, however, that the enzyme is present in large amounts only in extracts from normal healthy pancreas,[9] whereas extracts from the pancreas of arteriosclerotic patients either have very little or are completely devoid of elastase. This has confused the issue, and, though a later hypothesis[10] that elastase has both synthetic as well as catabolic activity deserves consideration, any opinions about the role of the enzyme in arteriosclerosis must of necessity be tentative yet. Whatever the outcome of these Hungarian workers' researches, their observations have acted as a spur to other groups of workers,[11 12] who, while studying the reaction between elastase and elastin, are approaching the problem differently.

CLINICAL RESEARCH AT THE MIDDLESEX

The Institute of Clinical Research and Experimental Medicine at the Middlesex Hospital, which has now been in existence for about eighteen months, contains animal houses, laboratories, a library, consulting-rooms, and an *x*-ray plant, besides single rooms and laboratories for the use of individuals. The cost is met by the allocation of part of the income from the hospital's endowment funds, but important additional financial grants have been made by the Leverhulme Trustees to found three clinical research scholarships, and individual bequests have also been received from a number of benefactors. The first annual report[1] of the Institute testifies to the wide variety of projects, necessarily at an early stage, which are being carried out there. Among them are clinical investigations into carcinoma of the lung and the cutaneous manifestations of the reticuloses, biochemical studies of endocrine disorders, radio-isotope studies of calcium exchange in bone, measurements of cardiac output by dye methods and of blood velocity, and research into the action of hypotensive drugs and the effects of hypothermia in animals. A clinical trial of the value of delayed-action tablets supplied by a pharmaceutical firm is also mentioned, and the report expresses the hope that other firms will collaborate in this type of research. The expenditure of the Institute in its first year's existence is estimated at somewhat over eight thousand pounds—a relatively small sum in view of the amount of work being undertaken.

The new idea behind the founding of this Institute was that "research facilities should be placed under the control and at the service of the whole consultant staff." The report mentions that when supervision by consultants has been close and active the research has materially benefited. This is an important point. Research is a technique that must be learnt by long and painstaking apprenticeship: it thrives on active encouragement and practical criticism. Many young men have ideas, but are without the experience needed to assess whether they are worth pursuing. On the other hand, it may be argued that consultants have little time to devote to research. The example of the Middlesex Hospital, however, makes it clear that when facilities are available time will be found and ideas will bear fruit. It is a scheme which should commend itself to other teaching hospitals at a time when clinical research is playing an increasing part in the training of men for consultant appointments.

[1] First Annual Report of the Institute of Clinical Research and Experimental Medicine, Middlesex Hospital, December, 1954.

RADIOACTIVE STRONTIUM FROM H-BOMBS

In a recent speech Dr. W. Libby, a member of the United States Atomic Energy Commission, appears to confirm the view expressed by some scientists that most of the explosive power of the H-bomb is derived from the fission of uranium rather than from the fusion of hydrogen. This means that the radioactivity produced in the explosion is proportional to the total explosive power; thus, a 10-megaton bomb would produce five hundred times more radioactivity than the type of bomb dropped at Hiroshima. Furthermore, the composition of the radioactivity is well known, since in both cases it consists of fission products. These products comprise thirty-four different chemical elements, among them several which are readily taken up by living organisms.

The isotope which appears to be the most dangerous in this respect is strontium-90. It has the very long half-life of 19.9 years and, being chemically similar to calcium, may be deposited in bone. In fact, it behaves in the body in a similar way to radium. For this reason the International Commission on Radiological Protection has set the maximum permissible amount of strontium-90 in the body at 1 microcurie, and the maximum permissible concentration in air at 2×10^{-10} microcuries per c.cm.

In a fission process about one out of every twenty radioactive atoms produced is of strontium-90. The initial activity of this isotope resulting from one 10-megaton bomb amounts to 30 million curies, and if this were spread over an area of 7,000 square miles, which was the area of the fall-out of the 1954 Bikini test, each square inch of the surface would contain an activity of strontium-90 of 1.2 microcuries (0.2 microcuries per square cm.). The radiostrontium may enter the body by inhalation while it is still airborne, but it is more likely to get in by ingestion. This may occur either by eating plants on which the strontium was directly deposited, or in a more indirect way: the strontium may be deposited in the soil and then taken up and incorporated into plant tissues, from where it may reach humans either directly or via grazing animals.

We announce with regret the death of Sir Archibald Collins at his home in Sydney on June 24. He was President of the Federal Council of the B.M.A. in Australia, an office he had held since 1951.

EMERGENCIES IN GENERAL PRACTICE

ACUTE RETENTION OF URINE

BY

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A patient is said to have retention of urine when he or she is unable to empty the bladder. The term "acute retention" is applied to the case in which there is a sudden complete stoppage. The term "chronic retention" is used to describe the condition when a quantity of urine equal to or more than the average capacity of the bladder (300 ml. or 10 fl. oz.) is constantly retained after the act of voiding. The cause of retention of urine differs in the two sexes, and, especially in the male, also differs with the varying age periods.

Aetiology

In the Female

Acute retention in the female is rare and is usually associated with a gynaecological or obstetrical event which makes the retention but an incident—albeit an important incident from the patient's point of view—in the course of the main medical condition. It occurs in labour, especially when there is obstruction in the second stage, and may result from oedema of the vulva soon after birth. It can also occur when a uterus with a large fibroid suddenly becomes impacted in the pelvis.

In the Male

In Childhood.—In infancy great difficulty and indeed a complete stoppage can occur if a narrow external urinary meatus becomes ulcerated. A complete phimosis may produce retention, and, much more rarely than formerly, a small stone may become impacted in the urethra. Such an incident is usually quite obvious, as is also the cause of the obstruction.

In the Young Adult.—Acute retention is rare in young adults. It may occur with acute urethritis and especially if this is associated with prostatitis or a prostatic abscess. It may result from a stricture of the urethra or from a stone impacted in the urethra, especially behind a stricture.

In the Older Adult.—After the age of 50 acute retention is much more often due to enlargement of the prostate gland having produced an obstruction at the bladder neck, and this is by far the commonest cause of acute retention. Such an enlargement is usually benign but may be malignant. Acute retention may, of course, also result from a stricture of the urethra present for many years which suddenly becomes completely occluded. A stone which has formed higher up the urinary tract may become impacted at the internal urinary meatus, in the prostatic urethra, or behind a stricture, or a prostatic stone may ulcerate into the canal. A neoplasm of the bladder may cause obstruction by infiltrating the internal meatus, or a benign pedunculated growth can have a ball-valve effect.

History

As in most ailments, an accurate history may be of prime importance in arriving at the correct diagnosis. Inquiry must be made about the presence and, if so, duration of any urinary symptom prior to the stoppage. If there is a long history of difficulty then either a stricture of the urethra or a simple enlargement of the prostate will be the most probable cause. Pain other than that due to the retention, together with the passage of a little blood in the urine, especially at the end, will suggest a stone. A previous history of frequency is in favour of an enlarged prostate unless there is also a urinary infection.

Haematuria may be due to a neoplasm, although bleeding does quite often occur in association with enlargement of the prostate. When the latter is the cause, the bleeding is often more marked at the beginning or end of micturition, or may occur from the urethra independently of the act. The exact mode of onset is often important, and the patient in the prostatic age group who has already had symptoms usually discloses some irregularity of habit, perhaps an indiscretion of diet or behaviour, or some other complementary factor. There may have been a sudden increase in fluid intake, and this is usually alcohol, but 2 pints (1.1 litres) of blood quickly given intravenously, or the administration of a diuretic in a patient with a decompensated heart, has not infrequently precipitated complete retention. It is probable that in such a case the bladder becomes filled too quickly for the patient to void before the organ becomes overfilled. An attempt to hold on to the urine after experiencing the desire to pass it is quite often a contributing factor, and the patient with the enlarged prostate is wise to take such precautions as will allow him to pass water as soon as he has the desire, while paying due heed to normal conventions of behaviour.

Confinement to bed for some entirely different complaint such as respiratory or cardiovascular disease or some injury, especially if this is to the head, may precipitate acute retention in a patient with an obstruction in the lower urinary tract. This is especially likely if too great an insistence is made on complete immobility. Many a man is quite able to start the act of micturition and more or less to empty the bladder, if allowed to do so standing up, but if kept lying flat he may be entirely unable to do either. A medical practitioner, therefore, must be careful in holding the balance in such a case, as the ills attendant on acute retention of urine may be a greater strain on a coronary thrombosis, or a failing heart, than is standing out of bed or the stress of being helped on to a commode.

Examination

In acute retention with complete stoppage the patient is obviously in pain. This is not constant, but, while there is usually a perpetual discomfort in the suprapubic region, at varying intervals (and often there is only a few minutes' remission) there is a quite severe and often agonizing pain there. This is, of course, an intense and unsatisfied desire to pass urine. By the time a doctor sees the patient the spasms of pain have usually been going on for some time and often for several hours, during all of which time the patient has failed to pass any significant quantity of urine. Occasionally a few drops are expressed at the height of the spasm, and if this should occur the small quantity of urine may be tinged with blood. The patient looks pale, tired, and apprehensive, and in some cases he is cold and clammy, with a poor pulse and a low blood pressure manifesting some degree of shock. The tongue is often a little dry and is frequently furred. On inspection of the abdomen there

is fullness of the lower half, and in all but the very obese a swelling can be felt—and sometimes seen. This swelling is acutely tender on palpation and dull to percussion.

Differential Diagnosis

Acute retention of urine with a complete stoppage is usually very obvious, and the diagnosis of the condition, if not the cause, should not remain in doubt. Occasionally, however, and this is especially so in the elderly, some overflow occurs and the condition must then be differentiated from chronic retention. In the chronic case there is no definite history of onset, whereas in the acute case with overflow the patient can usually give a fairly accurate date of its beginning. In chronic retention also, the bladder is far more distended. It can usually be seen, and, though much softer and not so tense, can always be felt. Quite frequently it is not symmetrical, but deviates to one side, usually towards the right. There is no tenderness on palpation, although firm pressure produces a desire to micturate, or may even cause some urine to dribble away. An acute infection of the bladder may give rise to some doubt in the diagnosis when the patient is obese, but with cystitis there is always burning on micturition and pain at the end of the act rather than at the beginning.

In a stout patient with a failing heart there may occasionally be some difficulty in reaching a definite diagnosis. If he is ambulant only a little urine is passed when he is up, but soon after lying down diuresis occurs. The marked nocturnal frequency may simulate overflow and this is especially so if ascites is also present.

The diagnosis may only be completely confirmed after a catheter has been passed and the bladder is found to be full, but before this is done it is most important to ascertain the cause of the retention. As has already been said; in female and younger male patients the history in conjunction with the examination fairly readily leads to the correct diagnosis. In the older male adult, however, this may not be so easily ascertainable. In the large majority of cases of acute retention occurring in men over the age of 50 the cause is mechanical and is due to a simple enlargement of the prostate. It is not always possible to be sure of the presence of an enlarged prostate when the bladder is acutely distended, but in the majority of such cases in which it is present the gland is felt pushed back into the rectum. In simple benign enlargement the surface is smooth, there is a well-marked midline groove, and the gland is elastic or soft in consistency. These findings, taken in conjunction with the history, allow a diagnosis to be made with reasonable confidence.

If the cause is due to a malignant change in the gland, on the other hand, the correct appreciation of this may depend considerably on the position of the malignant focus and on the extent of its spread. In the majority of such cases the diagnosis is easily determined by a digital rectal examination, since as a rule the posterior part of the gland is affected, is enlarged, irregular, and nodular, and the nodules have a hard consistency which is quite different from that of the common benign enlargement. In the fat patient—and so many urological cases seem to be in this category—it may not be possible to introduce a finger far enough along the rectum to appreciate the type of enlargement, and especially is this so if a malignant focus is high up in the gland. The nature of the obstructing gland will then become evident only at operation or even later, when the removed tissue has been subjected to histological examination.

When the retention is due to a stricture of the urethra the patient is usually in a rather younger age group. He gives a history of having had a poor stream for years without nocturnal frequency, and may well volunteer the information that he has had a stricture or a diminished stream ever since an attack of urethritis, which on questioning rarely has had adequate treatment. In such a case, on rectal examination, the bladder is felt to be pushed downwards and backwards into the rectum, but the prostatic bed is flat, smooth, and firm.

A correct appreciation of the cause of the acute retention is naturally most important in considering the treatment, since it is quite different in each of the groups.

Retention from Simple Enlargement of the Prostate

Acute Retention with Complete Stoppage

There has been considerable discussion on the treatment of this complication during the last few years, and urological opinion is not unanimous. There are the two schools—one advises immediate operation and the other catheterization of the bladder. The advocates of the first view claim that the risk of infection is minimal, that the stay in hospital is shortened, and that the mortality rate is lowered. Many urologists, and I agree with them, do not accept these deductions, and are against immediate operation for acute complete retention. The patient is in pain and should be relieved of this pain in the simplest and most rational way, which is to empty the bladder. The decision whether this should or should not be done may not devolve on the general practitioner. In an urban area it may well be easier and safer to send the patient to the nearest hospital, and, if the patient's home surroundings or the doctor's facilities are inadequate to allow of safe catheterization, this will always be so. On the other hand, the patient may be unwilling to go to hospital or his transfer may take some time to effect, and any doctor who may be called upon to deal with such a case ought to have the few requisites to hand.

The passage of a catheter must always be performed with due regard to surgical asepsis; if this is observed, infection should not occur in a case of acute retention. The instrument should be boilable, and the most suitable is a Tiemann's rubber catheter. This has an up-going tip, with the advantage of the Coudé design, and will slip easily through the prostatic urethra. It is fairly firm and can be introduced without contaminating that part of the instrument which is to enter the bladder or most of the urethra. It should be of a suitable size—16 to 18 Charrière (9–10 English) gauge. Some form of local analgesia is desirable but not essential. An effective and handy preparation is lignocaine jelly, which is dispensed, sterile, in a tube together with a conical nozzle which can be boiled. 10 ml. of the jelly is introduced through the external urinary meatus and milked along the canal. It is an advantage to have a penile clamp which will prevent any of the material escaping. Five minutes is sufficient to produce analgesia.

The glans penis and external meatus are cleaned with a suitable antiseptic—for example, "dettol" or 1 in 4,000 oxycyanide of mercury—or detergent (for example, cetrimide). The hands are again washed. The catheter is held near the distal end, and the tip, well lubricated (a water-soluble lubricant—kept sterile in a tube—is satisfactory), is introduced through the external urinary meatus and passed along the canal. Some resistance may be encountered low down in the bulb, but with gentle pressure and perhaps a little rotation of the catheter this is overcome. As the tip slips into the bladder, urine rushes out. The patient very soon experiences relief. The bladder is emptied and the catheter is withdrawn. He should now be encouraged to drink bland fluids. As he is usually quite thirsty, he is not averse to this. He should be asked to try to pass water in two hours, or earlier if he feels the desire.

In a considerable proportion of cases, normal micturition is re-established, but more than one catheterization may be necessary before this occurs. Due warning must be taken of this acute retention, however, and arrangements should be made for the removal of the prostate gland at an early date. If the patient does not re-establish normal micturition, admission to hospital must be arranged immediately and prostatectomy will be undertaken as soon as is convenient.

Acute Retention with Overflow

As has been said above, a few hours after a complete stoppage a certain proportion of patients begin to pass small quantities of urine. This to a great extent relieves the patient's distension, and, whilst he may be a little uncomfortable, he does not experience the severe pain of complete retention. Such a case should always be treated in hospital and requires urgent admission. He should never be catheterized outside an institution, as it is highly improbable that he will re-establish normal micturition.

Chronic Retention

Chronic retention is rarely an emergency and should never be treated outside a hospital. A catheter should never be passed in such a case; any instrumentation outside hospital is meddlesome. If renal function is adequate, as can be gauged by the clinical condition of the patient—especially if he has a clean tongue and a clear concentrated urine—he can safely be sent to hospital as an out-patient for investigation and later treatment by operation of election. If, on the other hand, there is evidence of renal insufficiency, as shown by a furred tongue, constipation, lack of concentration, and polyuria with urine of low specific gravity, he is a medical emergency and the retention will require careful handling, probably by drainage and correction of the electrolytic imbalance. He therefore requires admission to hospital as an emergency.

Acute Retention from Carcinoma of the Prostate

The diagnosis of carcinoma of the prostate in the presence of acute retention is not always easy and indeed may not be made until after the gland has been removed. It may well be that even if the general practitioner is fairly sure of his diagnosis he will require a second opinion before starting the patient on a permanent oestrogen regime, and it is probable that he will send the patient to hospital. After diagnosis the condition should be treated by catheterization and the administration of stilboestrol, 15 mg. being given eight-hourly. About 10% of cases do not respond to hormone therapy and will require surgical intervention of some sort, usually endoscopic resection.

Acute Retention from Stricture of the Urethra

If this diagnosis is made it is wise to send the patient to a hospital with an adequate urological department. The calibre of a stricture in a case with acute retention is necessarily small and will probably require a filiform instrument to negotiate the canal. Such instruments are rarely found in a general practitioner's armamentarium, and indeed are not available in many general hospitals. The methods of treatment which may be employed at hospital will depend on the facilities. The condition can be relieved by passing a filiform guide of Phillip's pattern, screwing on a catheter, and emptying the bladder by this means. If this instrument is not available a filiform bougie may be passed and should be tied in. The patient can then drip urine alongside the bougie, which will dilate the opening of the stricture and permit the subsequent passage of a larger instrument. If it is not possible to pass an instrument an external urethrostomy or suprapubic cystostomy will be necessary.

Next article on Emergencies in General Practice.—"Acute Anxiety and Hysteria," by Dr. Gerald Garmany.

Refresher Course Book.—Copies of the second volume of collected articles from the Refresher Course for General Practitioners are still available at 25s. (postage 1s.) each. The first volume is now sold out.

Clinical Pathology Book.—"Clinical Pathology in General Practice," a collection of 39 articles on clinical pathology that appeared in the *Journal* as part of the Refresher Course for General Practitioners, is now available, price 21s. (postage 9d.).

Both these volumes are obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1, or through any bookseller.

THE CHILDREN'S HOSPITAL OF PHILADELPHIA

[FROM A SPECIAL CORRESPONDENT]

As briefly noted in our issue of June 11 (p. 1436), the Children's Hospital of Philadelphia, the first hospital for children in the United States, has been celebrating its centenary. The celebrations took the form of a convocation at which distinguished members of its staff, past and present, together with visitors from other parts of the country and from overseas, read scientific papers. Delegates from the Hospital for Sick Children, Great Ormond Street, had been invited to assist at the ceremonials of their young sister, and brought with them as a gift a block and gavel made from the wood of the plane tree that used to grow in Dr. Mead's garden in Great Ormond Street. At a banquet, which was the highlight of the social events, Dr. BERNARD SCHLESINGER spoke of the Great Ormond Street–Uganda scheme, and Professor ALAN MONCRIEFF sketched the historical background of the development of paediatrics in Britain from Armstrong in the eighteenth century to Charles West in the nineteenth, with the opening of the hospital in Great Ormond Street in February, 1852. Mr. CLAUD RAINS gave a moving reading of passages from the famous appeal by Charles Dickens for funds for Great Ormond Street.

The hospital in Philadelphia owes its origin to the visit to Britain of Dr. Francis West Lewis. He was appalled by the deaths of children in hospitals for adults, and at Great Ormond Street he recognized the answer to his problems. On November 23, 1855—the day after Thanksgiving—Lewis, then a young man of 30, saw the opening of a twelve-bedded hospital in the southern part of the city. To-day, with 160 beds and after two moves, the Children's Hospital of Philadelphia is a world-famous institution under the skilful guidance of Dr. Joseph Stokes, Jr.

An analysis of drug addiction in France is made by Charles Vaille, President of the U.N. Commission on Narcotic Drugs, and G. Stern, Chief of the French Bureau of Narcotics, in the U.N. *Bulletin on Narcotics*, Vol. 6, No. 2. Because Paris addicts account for 57% of the French total and have an illegal market, the authors give detailed figures for the Department of the Seine 1945–52. They studied 768 addicts, excluding the North African and Chinese element, and found a reassuring absence of juvenile cases: the peak years for women were 35–39, for men 45–49. Of the 412 women studied, 40% were of therapeutic origin, 33% were recidivists, and 12% engaged in the traffic. Of the 356 men studied, the figures were 34%, 15%, and 27% respectively. In both sexes the incidence was highest among those who worked in medical and artistic circles. 253 of the women and 100 of the men did not work; 25% of the women were divorced. Heroin, with morphine, accounted for two-thirds of the cases, and while cocaine consumption had dropped to 3%, dihydro-oxycodeinone, recently introduced but proving dangerous, accounted for 11.5%. Injection was found to be the prevalent method of absorption used in 84% of the cases, but during the last three years suppositories have been used. The authors stress the responsibilities of the medical profession: "Disagreeable as the admission may be, it must be recognized that the real origin of many cases of drug addiction is the incompetence of the attending doctor." Of the 768 Paris addicts, 275 were supplied by medical prescription, yet 52 only were sick, and a mere 10 justified the prescribing of drugs. The authors emphasize the role of the pharmacist in the struggle against addiction, for he can inform the inspector of any suspicious prescription for narcotics, or when a client is having such prescriptions from several doctors. They also state their belief that "previous mental disease is not an invariable feature of drug addiction."

British Medical Association, Canadian Medical Association, and Ontario Medical Association

JOINT ANNUAL MEETING, TORONTO, 1955

SUMMARY OF PROCEEDINGS

SECOND PLENARY SESSION—"THE CLINICAL APPLICATION OF PHYSIOLOGY TO MEDICINE AND SURGERY"

The second plenary session was held in the Royal York Hotel on Wednesday morning, June 22, with Professor R. F. FARQUHARSON (Toronto) in the chair. He read the address of Sir HENRY COHEN (Liverpool), who was unable to be present. There could be no more fitting place than Toronto for such a meeting, he said, for here 30 years ago insulin had been discovered.

Influence of Claude Bernard

The classical discoveries of physiology, he went on, were without any direct effect on the theory and practice of medicine until the middle of last century. Modern scientific medicine dated from the time of Magendie and his pupil Claude Bernard. "The scientific medicine which it is my duty to teach you does not exist," said Claude Bernard to his students. "The only thing to do is to lay the foundations upon which future generations may build; to create a physiology upon which this science may later be established. Medicine is the science of sickness; physiology is the science of life. The latter is more general than the former. That is why physiology should be the scientific basis of medicine. The physician is one who studies the sick and uses physiology to enlighten and advance the study of disease."

The major triumphs of physiology in the field of clinical medicine arose from the pragmatic tenet of physiology that the workings of the body were machine-like. Hence the first and perhaps major contribution of physiology to medicine came from the investigation of the sick patient with instruments of precision such as the electrocardiograph and electroencephalograph. The most recent of research tools, radioactive isotopes, opened up vast hitherto uncharted territories.

Applications of Chemical Physiology

The application of chemical physiology to clinical medicine had revolutionized the diagnosis and management of diabetes, gout, endocrine disorders, vitamin deficiencies, digestive tract lesions, and some cardiac diseases. The various disturbances associated with fluid, electrolyte, and acid-base imbalance were of particular importance to the surgeon, and the recognition of such syndromes as phenylpyruvic oligophrenia, porphyria, lipoidosis, and hypoglycaemia had stemmed from the application of physiological methods in the study of disease. But Sir Henry Cohen deprecated the use of an almost limitless battery of investigative instruments on the sick in the hope that "something would turn up." Answers to problems investigated by any instrument were only given in terms of that instrument. Thus if the response of the occipital cortex to light shone into the eye were investigated with a galvanometer the answer would be given in terms of electrical units and not in the language of the psychology of perception.

In the field of therapeutics physiology had made valuable contributions. The prime objective of treatment was to eliminate, neutralize, or destroy the ultimate cause of disease—bacterial and protozoal, toxic, genetic, and the rest. But in many diseases the ultimate cause lay hidden, as in duodenal ulcer, allergic disturbances, and diabetes, for example. But, since we knew something of the deranged mechanisms known to occur in these diseases from our knowledge of physiology, we were not powerless to influence them for good. We could neutralize the hyperacidity in duodenal ulcer by alkalis and medical vagotomy, the histamine excess in allergy by a host of antihistamine drugs and by cortisone, and the hyperglycaemia and ketosis of diabetes by insulin. But in such instances, although the effects of disordered physiology were corrected, or deficiencies compensated, as in myxoedema, we were not necessarily restoring normal function. The patient felt better, but his disease persisted.

Limitations of Physiological Method

The traffic between physiology and medicine was not all one way. Careful clinical observers had thrown much light on physiological mechanisms in the adrenal, pituitary, and other glands, on inborn errors of metabolism, and on neurophysiology. But Sir Henry Cohen admitted that there were still vast territories unconquered. Many of the physiological fields in which ignorance abounded were those concerned with symptoms which had a perceptive component, and in which measurement was difficult. The mechanisms of pain, nausea, heartburn, flatulence, and lassitude, for example, still awaited satisfactory elucidation. The mechanism of many common signs was also incompletely understood, such as oedema, alterations in blood coagulability, immunity, and even obesity. And the same was true of the physical basis of many so-called psychological phenomena—attention, memory, will, behaviour, and the like. The whole man was far from being the sum of his physiological parts.

Between medicine and physiology, he said in conclusion, there was now no conflict or discord, as had been the case in former days within the memory of some of his audience. The physiologist's pursuit of knowledge for its own sake was indispensable to the understanding and control of disease.

Value of Measurement

Professor J. DOUPE (Winnipeg) spoke as a physiologist. He said that medicine and physiology embraced a common body of knowledge, and it was sometimes impossible to tell to which of them a given subject properly belonged. Our basic knowledge on oedema, pernicious anaemia, and subacute combined degeneration of the spinal cord had been advanced primarily by physiologists and not by clinicians. Many clinicians now applied the techniques and disciplines of physiology in their study of disease. The basic concepts of physiology were part of the equipment of all clinicians, but such branches as biochemistry, electrical physiology, and the like demanded the services of an expert, and often the newer knowledge could not be communicated to a person untrained in these disciplines.

Professor Doupe stressed the value of measurement in research. Unfortunately many clinical phenomena, such as pain, could not be measured. The physiologist and the clinician worshipped different gods. The physiologist worshipped measurement. He also liked tinkering and inventing gadgets.

Our Knowledge 50 Years Ago

Sir HENRY DALE (London), the third speaker, traced the association of medicine and physiology back to Harvey in the early seventeenth century. He said that these two disciplines had remained as separate streams of knowledge for nearly three centuries. It was only by the closing years of the nineteenth century that they became united. Progress in physiology until well into the last century was made by workers who had little contact with medicine and its purposes. Even when the revival came for physiology as a separate but essentially medical discipline, under Claude Bernard and Ludwig, and was eventually transmitted to Britain, the United States, and other countries, the cleavage

which had opened in this long interval between the traditions and aims of physiology and those of clinical medicine still showed but little sign of being closed. It was to remain widely open until the end of the century and even for some years into the next. Sir Henry said he could recall at the turn of the century physicians who maintained that medicine was an empirical art and deprecated any attempt to introduce into medicine ideas derived from physiology. He humorously referred to his clinical teacher, who told him when he entered the hospital wards to forget all the physiology that he had ever learned.

Sir Henry Dale went on to compare the state of physiological knowledge when he was a student in 1900 with that of to-day. Myxoedema was then treated with thyroid, but its use was empirical. Nothing was known of the relation of the thyroid gland to iodine or of its secretion of a hormone. Indeed, endocrinology was still in its infancy. The physiology of the pituitary was still rudimentary, and nothing had been added to our knowledge of the suprarenals since the classical description of Addison in 1855. Our knowledge of the function of carbon dioxide in the physiology of respiration had to wait for the investigations of Haldane and Priestley just 50 years ago. Neurophysiology had hardly developed by then; Gaskell, Langley, and Elliott had not yet published their work. Immunology was in its early beginning and had made only one positive contribution to therapeutics—namely, diphtheria antitoxin. The phenomena of allergy had not yet been recognized. Biochemistry could hardly be called a subject in its own right, and the world still had to wait 12 years for the word vitamin. Ideas on nutrition were still crudely quantitative, dealing mainly with calories and energy values.

The cleavage between medicine and physiology at this time, said Sir Henry, was not only due to the complacent empiricism of clinicians and their reluctance to recognize knowledge which had been acquired by the experimental method, but also to the paucity and fragmentary knowledge which physiologists had by then achieved and the little they had to offer clinical medicine. So little, indeed, did the physicians expect from the physiologists that they were apt to overlook such fundamental observations as Cannon's invention of the bismuth meal for radiography and Minkowski's experimental production of diabetes by pancreatectomy.

Twentieth-century Discoveries

Since the beginning of the century there had been epoch-making discoveries. Ehrlich's discovery of salvarsan marked the birth of chemotherapy; this was followed by the discovery of the antimalarials, the sulphonamides, penicillin, and all the other antibiotics. The isolation of insulin, and its rapid development, in Toronto first and then the world over, provided a starting point for the new science of endocrinology. Edward Mellanby's discovery of the lack of a fat-soluble vitamin as the cause of rickets had given a new impetus to research in nutrition. The antihistamines were more recent. Then there was the discovery of drugs blocking or reinforcing the transmission of impulses at junctional nerve endings. All these were remedies dealing with symptoms rather than with primary causes, but on a new basis of detailed physiological knowledge. The development of modern anaesthesia had turned on the recognition of the anaesthetist as a physiologist and pharmacologist. To-day almost every aspect of medical and surgical practice depended on fundamental physiological principles.

One of the first aims of physiology to-day, said Sir Henry in concluding his address, should be to provide, in union with clinical medicine, a scientific basis for the study of events in the higher nervous centres in relation to their influence on visceral, vasomotor, and metabolic reactions and on somatic phenomena in general.

The Clinician and Physiology

The session was concluded by Professor J. S. L. BROWNE (Montreal), who regretted that clinicians and physiologists tended to think in terms of their original training and did not weave other disciplines into their corpus of knowledge. He did not think that information was any more factual or correct because it was capable of measurement. It did not follow that, because a certain constituent of some body fluid was higher or lower than normal, it was the cause of the condition under investigation. There was a tendency either to accept blindly work coming out of a laboratory because it was "scientific," or to ignore it completely because it was not "clinical." Either view was to be deplored. Ideally the physiologist, and in fact all laboratory workers, should be able to communicate the results of their investigations to the clinician, but knowledge had now become so specialized and complex that the latter could not always comprehend it. There was need for a "middle man" in this connexion. Some of the newer drugs, such as cortisone, said Professor Browne, although they produced remarkable effects in some diseases, were often of more value in increasing our knowledge of the nature of disease than in therapeutics. There was an art as well as a science of medicine, he said, and there could be too much science and too little humanity in the treatment of a patient.

FIRST GENERAL SESSION

The first of three general sessions was held on Tuesday, June 21, under the chairmanship of Dr. M. O. KLOTZ. Three papers were read, Professor STANLEY GRAHAM (Glasgow) opening with the Blackader Lecture on "The Changing Pattern of Paediatrics." Dr. Alexander Blackader, who died in 1932, was formerly professor of pharmacology and therapeutics at McGill University, as well as a most successful editor of the *Canadian Medical Association Journal*, and this lecture was founded to commemorate his work for Canadian paediatrics.

Changes in Paediatrics

Professor Graham said that the last 25 years had witnessed a revolution in paediatric practice. He was particularly impressed by differences in types of disease seen now compared with the years just after the first world war. The fall in the incidence and mortality of the infectious diseases and of infections generally was probably the most striking feature in the vital statistics during this period. Though the sulphonamides and antibiotics must be given much of the credit, there was evidence that many infections had been diminishing in incidence and severity before the new drugs were introduced. There were probably many factors concerned—better nursing, better health education, improved hygiene and sanitation, smaller families, and a greater sense of social responsibility. There had also been great advances in our knowledge of nutrition, neonatal diseases, and metabolic disturbances generally. Professor Graham paid tribute to those Canadians who were leaders in the work of preventing diphtheria—now no longer seen by medical students.

Rickets

The speaker referred in some detail to the history of rickets, and described the dangers seen in this disease at the Royal Hospital for Sick Children, Glasgow. When national dried milk was issued during the war the incidence of craniotabes promptly fell, and this disorder was no longer seen. There was no doubt that many infants were now getting more vitamin D than was necessary for the prevention of rickets. This might have some connexion with hypercalcaemia: some infants were perhaps more sensitive than others to vitamin D, as some were more resistant to it.

There had also been a change in the aetiological pattern of convulsions in infants. Tetany caused by low serum calcium used to be the commonest cause of convulsions, but in 1948 only two out of twelve infants admitted for convulsions were suffering from hypocalcaemia. There was no adequate explanation for this change, and the incidence of convulsions remained the same.

Social Problems

The recent achievements in the cure and prevention of disease had thrown into much greater prominence the problems of social and psychological medicine. Often about one-third of the children admitted to the wards would be found to be there for socio-economic reasons. In the early years of the present century paediatrics was inclined to be too scientific, too business-like, but to-day's excessive emphasis on mother-love—often mixed with anxiety and apprehension, and protection from all emotional disturbances—was surely an over-correction. Parents were obliged to steer a middle course between the demonstrative affection which spoiled the child and the spartan regime of the Victorian age.

Cerebral Localization

For the second paper read at this general session Sir GEOFFREY JEFFERSON (Manchester) had selected the title "Variations on a Neurological Theme." He explained that this was to consist of some reflexions on cerebral localization. Until observable results were obtained by electrically stimulating the brain, the theory had been that the brain acted as a whole, and methods of stimulating it prior to the use of electricity were crude in the extreme. Hughlings Jackson had come to the conclusion that localized fits must mean local disease, and Sir Geoffrey had investigated the origin of some of the influences that might have led him to that conclusion.

Hughlings Jackson admired the British philosopher Herbert Spencer. In his *Principles of Psychology*, published in 1855, Spencer had discussed the localization of function in the brain—the concentration of special kinds of function in special places. How did Spencer come to be interested in nervous activity? His interest in psychology was not so surprising, "for psychology has always been a paradise for the amateur," and in any case, as a philosopher and metaphysician he was a disguised psychologist. Spencer had in his early days been actively interested in phrenology and wrote on the subject—for instance, attributing amativeness (sexuality) to the lower surface of the occipital lobes. Though he discarded phrenology, Spencer continued to recognize the necessity for organization in nervous systems, as his later writings made clear.

Although the localization of such attributes as mother-love and so on was now a thing of the past, something had remained behind of these early phrenological theories. For instance, the work of Parnell on somatotyping was tending to show a relationship between physical types and certain mental or intellectual attributes.

Variations in Mental Power

Sir Geoffrey Jefferson described the statement that all men were born equal as absolute rubbish—men were born equal only in helplessness. In mental power there were variations which education could never completely overcome. Did different patterns exist in our brains? Had some people several million more nerve cells than others? These were questions which could not yet be answered, but in so far as research was concerned we were living in as exciting a time as any in the past. Herbert Spencer was right in declaring that different parts of the brain had special functions, but that told us nothing of their relationships. Our brains were like great nations—the secret of their success depended on the richness of communications and the harmony of the units of which they were comprised. We were now beginning to understand something of the integration of the brain. It was more satisfactory as a working explanation to regard the brain as integrated not from the cortex downwards but from the brain stem upwards. Progress in the physiology of the brain had been remarkably fast, but the brain was a more complicated piece of mechanism than man could ever hope to make—though "mock-ups" with some resemblance of a crude sort did exist.

Sir Geoffrey concluded by saying that if we no longer expected to discover where in the brain tenderness, love, and courage exist, we knew that they did exist—as by-products of men's right actions.

The Art of Dermatology

Dr. R. M. B. MACKENNA (London) was the last speaker. In clinical medicine it was often more difficult to practise an art than to pursue the principles of a science, he said. The art of dermatology had two purposes: to help unravel the aetiology of a patient's malady, and to ensure maximum efficiency in treatment. For instance, in the successful treatment of furunculosis, not only were the well-known aetiological factors important, but also the more recondite. The doctor's letter might be very helpful in giving a clue to the personality of the patient, and that in its turn had an important bearing on how willingly and competently treatment would be carried out. Much could be said about the technique of consultation. Lying undressed on a couch made a patient feel defenceless, and the time there should be kept to a minimum, except perhaps with an aggressive patient. Specially difficult problems in handling were presented by the patient with a self-inflicted eruption and the litigious patient. The former deserved sympathy rather than anger on the part of the doctor, but tact and firmness might be needed to elicit a confession. It might be wiser not to inform the family of the true position, but only to make it quite plain to the patient that you knew what was the matter.

The success of treatment depended in dermatology more than in any other branch of medicine on the patient, continued Dr. MacKenna, and it was essential to assess both his level of intelligence and whether he was slap-dash or over-conscientious. Adolescents with acne vulgaris should not be overburdened with detailed advice, otherwise co-operation would be lost. Psoriasis was another malady that was sometimes badly handled. Often enforced bed-rest was valuable. In conclusion, the speaker pleaded that the treatment of exposed areas should be made as pleasant as possible for the patient, and that the old remedies should be considered before flying to the antibiotics.

THE SECTIONS

SECTION OF CHILD HEALTH

Tuesday, June 21

Problems of the Neonatal Period

Under the successive chairmanship of Professor A. A. MONCRIEFF (London), Dr. D. B. LEITCH (Edmonton), and Dr. A. GOLDBLOOM (Montreal), the discussion on the problems of the neonatal period was opened by Dr. MARY CROSSE (Birmingham). She gave an analysis of the causes of neonatal mortality in the years 1950–3 which showed that more than 75% of all deaths were associated with immaturity (29.7%), congenital malformations (14.9%), birth injury (14.8%), and respiratory failure (18.9%). While the prognosis of these four groups could be improved by adequate paediatric care, better prophylaxis in three of them depended on the obstetrician, and this fact alone made close co-operation between paediatrician and obstetrician essential. Respiratory infection accounted for more than 9% of deaths, and this, the commonest cause of post-natal death, required further research, prompt recognition, and energetic treatment.

Dr. JEAN WEBB (Department of National Health and Welfare, Ottawa) stated that from 1926 to 1953 the neonatal mortality rate in Canada had fallen from 45 to 23 per 1,000 live births, though this rate was still 5 per 1,000 higher than in England and Wales. Analysis of the Canadian figures showed the causes of neonatal mortality to be identical with those in England and Wales, with the exception that death from ill-defined causes was greater in Canada. Both speakers

identified the last group with a need for better paediatric care, and both agreed that improved prophylaxis would require combined studies by obstetrician and paediatrician. A question by Dr. B. SCHLESINGER (London) elicited the information that the infant nurseries in Canada, as in Great Britain, were coming increasingly under the care of the paediatrician.

Anoxia and Respiratory Failure

The paper by Professor W. S. CRAIG (Leeds) on anoxia and respiratory failure was read for him in his absence. He emphasized the need for increased research, despite the improvement in the management of anoxia which had already been achieved. The training of medical students and pupil midwives in clinical observation should lead to the earlier recognition of aspiration pneumonia, apnoea, pneumothorax, and general infections which were often associated with anoxia and respiratory failure. In treatment, intragastric oxygen was useful, and, in prophylaxis, the withholding of fluid from premature babies in the first few days of life was of doubtful value.

Dr. R. A. WILSON (Vancouver) had not been impressed by the use of mechanical respirators in the management of neonatal respiratory failure and thought the important measures were the tracheal toilet and the administration of oxygen. Dr. N. R. MACKAY (Wellington, N.Z.) thought that bronchial aspiration was unnecessary, and might be harmful, and Professor MONCRIEFF agreed that it was usually unnecessary, though in the hands of the interested expert it was sometimes life-saving.

Retrolental Fibroplasia

Dr. P. H. SPOHN (Vancouver), in a paper on retrolental fibroplasia, stated that the disease was now almost entirely preventable. He showed slides illustrating its pathology. The first stage was the proliferation of vaso-formative tissue, the second retinal detachment with an extension of fibrous tissue into the vitreous, and the third, the formation of the dense retrolental fibrous membrane. He reviewed the evidence that the condition was associated with concentrations of oxygen which were too high. The researches of Patz, in Baltimore, and Ashton, in London, had showed that high concentrations of oxygen produced identical retinal changes in newborn animals. Oxygen should not be given to premature babies unless clinically indicated, and never in concentrations higher than 30 to 40%.

Professor A. L. CHUTE (Toronto) agreed that all flowmeters, of whatever make, were useless and oximeters should be employed, while the amount of oxygen to be given should be precisely stated and recorded. A question from Dr. R. SOUTHBY (Victoria, Australia) elicited the reply that mental defect had not been associated with retrolental fibroplasia in Dr. Spohn's experience, and Dr. CROSSE suggested that where it had occurred this was the result of kernicterus, for which high concentrations of oxygen had been used.

Erythroblastosis

In a paper on erythroblastosis, Dr. H. BRUCE CHOWN (Winnipeg) observed that the efficiency of exchange transfusion as a method of treatment had made it more difficult to study the natural history of the disease, but, in recording some family histories, he posed several questions to which answers were not yet available. He described, "for simplicity's sake," three levels of the disease—anaemia, jaundice, and stillbirth. In the first group of families the disease began and continued at one of these levels—that is, anaemia—but different patterns of blood formation were seen and blood formation sometimes failed to keep pace with haemolysis. The second group of families corresponded to the original hypothesis of Levine, since the severity of the disease advanced in subsequent pregnancies. In other "reversing" families the disease became less severe; and in the fourth group of "irregular" families its severity alternated in succeeding pregnancies.

Causes of Death in Prematurity

Dr. W. L. DONOHUE (Toronto) discussed the causes of death in prematurity. He first outlined the causes of prematurity under the headings of maternal and foetal disease and the large group in which no cause could be determined. He described two groups of premature babies, the "uncomplicated" and those who had some disease in addition to prematurity. In the "uncomplicated" prematures he considered that death was always due to respiratory causes. He showed slides illustrating the pulmonary lesions—atelectasis, hyaline membrane, haemorrhage, and infections which alone or in combination were responsible for death.

Congenital Malformations

Professor ALAN MONCRIEFF (London) gave a comprehensive account of the causation and prevention of congenital malformations, paying especial attention to environmental causes. These were classified under the headings: obstetric, dietetic, toxic (including toxoplasmosis and virus infections such as rubella), endocrine, anoxic, and "actinic" (various radiations). Of these varied causes rubella was the best documented and the most hopeful in prophylaxis and treatment. Retrospective analyses had indicated that nearly 90% of children might be affected if the mother had suffered from rubella in the first few months of pregnancy. Prospective analyses suggested that 17% was a more probable incidence. The best practical advice at present was that girls should have rubella before marriage, and if it developed in the first few months of pregnancy, then large doses of gamma globulin (up to 20 ml.) should be used.

In general, mothers should be well nourished during pregnancy and they should produce their children while they were still young. More specific prophylaxis would have to wait upon increased knowledge.

Mr. DENIS BROWNE (London) discussed the causation of congenital deformities and their treatment. He described them as due to failure of formation, of fusion, of migration, and of obliteration. A second group was due to abnormal mechanical conditions *in utero*—malposition (talipes), increased mechanical pressure (Arnold–Chiari deformity), and increased hydraulic pressure (arthrogryposis). He described some congenital abnormalities such as hare-lip, talipes equino-varus, scoliosis, and malformations of anus and vagina. In the orthopaedic abnormalities he emphasized especially the principle of "controlled movement." He illustrated his methods by slides and adorned his descriptions with emphatic aphorisms which pleased his audience—for example, "It is a popular bromide that surgeons should continue to practise the method with which they are familiar. I think that all surgeons should learn to use the methods which are the best available."

SECTION OF MEDICINE

Monday, June 20

Heart Failure

In the absence of Sir Henry Cohen (Liverpool), Dr. E. R. CULLINAN (London) and Dr. R. B. KERR (Vancouver) presided over the session devoted to the subject of heart failure.

Dr. H. GARFIELD KELLY (Kingston, Ontario) spoke on the mechanism of heart failure, pointing out that in congestive failure a reduction in cardiac output caused tissue congestion and oedema. At first the heart failed only on exertion, later it failed at rest. Such failure was associated both with reduced output (i.e., in valvular disease) and, in other circumstances, with increased output (i.e., hyperthyroidism). The terms low-output failure and high-output failure were convenient.

Elevation of venous pressure was not a true consequence of back pressure but a compensatory phenomenon due to increased venous tone and increased blood volume inducing better filling of the heart. Clinical evidence of increased venous tone was seen in the coldness and cyanosis of the extremities.

Increase in blood volume in spite of increased venous pressure was due to the abnormal retention of salt and water by the kidney. The glomerular filtration rate was diminished and tubular absorption of water and electrolytes increased. Dr. Garfield Kelly attributed the changes to complex reflex and hormonal factors and possibly to disturbed liver function. After reviewing the various hypotheses he concluded that no simple explanation was possible, but that this important field required further study.

Treatment of Heart Failure

Dr. STEPHEN WHITTAKER (Warwick) said that digitalis was still the most useful drug in the treatment of congestive heart failure, whatever the rhythm. The treatment of left heart failure was a medical emergency. Venesection or the application of venous tourniquets to the thighs should be combined with the use of morphine and aminophylline. Oxygen was of special value when heart failure was due to chronic respiratory disease: digitalis was, in these cases, used later to consolidate improvement.

The mercurial diuretics remained the greatest advance since digitalis, for the ion exchange resins had proved to be disappointing. It was important to avoid sodium restriction when mercurial diuretics were used.

Thyrotoxicosis was often overlooked as a cause of heart failure (a point emphasized by subsequent speakers).

Of the newer drugs, procaine amide had a quinidine-like action; it was valuable in the treatment though not in the prophylaxis of paroxysmal tachycardia.

In reply to questions, Dr. Whittaker said that oxygen masks or bags were an alternative to oxygen tents in the treatment of cor pulmonale. Adequate digitalization could be judged by a return to regular rhythm, by the apex rate, and by the absence of toxic side-effects.

Mitral Valvulotomy

Dr. PAUL DAVID (Montreal) provided convincing evidence of the value of mitral valvulotomy in 75% of a large series of cases. It was clear that skill and experience were needed in their selection. Death from mitral stenosis occurred on the average at 43 years of age, the life span depending largely on the size of the mitral orifice. The surgical mortality was 10.9%. He used a complex coefficient system for evaluating improvement.

The dramatic clinical improvement after mitral valvulotomy was confirmed by subsequent speakers.

Electrocardiography

Dr. HUGH STANSFIELD (Vancouver), after surveying the historical aspects of electrocardiography, said that the technique was most useful in the diagnosis of the arrhythmias and in coronary artery disease. Multiple leads provided increased accuracy. A large series of atypical tracings were demonstrated. The importance of multiple leads, serial tracings, and of repeating tracings after arrhythmias had been subjected to appropriate therapy, was emphasized: indeed, these measures provided the answers in most cases. Nevertheless the clinician must usually depend largely on the expert for interpretation. In reply to a question, Dr. Stansfield said that a normal tracing did not exclude rheumatic carditis.

Atypical Coronary Disease

Dr. KENNETH HARRIS (London) spoke of the clinical aspects of atypical coronary disease. An exact history of the nature of pain, of its onset, of its movement, of its relation to other symptoms, was important. Silent or painless coronary thrombosis was a doubtful entity. Occasionally pain started in the wrists or jaw and later extended to the chest. Certain prodromal symptoms were present in 30% of cases and associated with a decreased mortality. These were: increasing severity of previous angina; sternal pain, constant or inconstant, unrelated to exertion or emotion; and reduced capacity for exercise after a meal or on a cold day. Such symptoms should lead to prophylactic therapy and, if this failed, to early diagnosis: they deserved even closer attention when present in susceptible subjects —those with a family history of heart disease, with hypertension, or with diabetes. Doctors, lawyers, and business men had a high incidence of the disease.

Treatment of Cardiac Infarction

Dr. WILLIAM EVANS (London) began by saying that the diagnosis of cardiac infarction was incorrect in 25% of cases. Physical signs were usually present. A normal electrocardiogram, provided it had been competently undertaken, was strong evidence against the diagnosis. CR leads were superior to V leads. Dr. Evans showed a slide of the different types of electrocardiographic change seen in coronary thrombosis which was so simple and clear that it might well replace most of those in student textbooks.

Dr. Evans next turned to the subject of treatment. He advocated moderate warmth, rest (and this means non-interference), and morphine for pain—if the dose had to be repeated three times the prognosis was bad. These were the essential immediate measures. Reassurance was important. Convalescence should have as its aim a return to usual work and familiar associations. Among the memorable remarks made by Dr. Evans one deserves special mention: "It is better to do nothing than to do something when nothing needs to be done."

SECTION OF NEUROLOGY

Monday, June 20

The first meeting of the Section of Neurology was on June 20, and Sir GEOFFREY JEFFERSON (Manchester), who presided, opened the discussion with a paper entitled "The Disintegration of Consciousness in Posterior Fossa Lesions." Pressure on the brain stem was the important factor in the rapid development of unconsciousness which was often observed. The reticular formation was probably the anatomical structure involved, and great watchfulness was needed if the development of coma was to be recognized.

Hypothermia

Dr. W. M. LOUGHEED (Toronto) described the use of hypothermia in neurosurgery. When the body temperature was reduced to 25° C., the cerebral metabolic needs were reduced by 30%, and this method could be applied to assist the neurosurgeon. The patient was cooled in a bath of iced water to the desired temperature. The circulatory and biochemical changes necessitated careful supervision.

Dr. E. H. BOTTERELL (Toronto) described his use of hypothermia as an aid to operations on cerebral blood vessels for the treatment of leaking intracranial aneurysms. It had been proved possible to operate on aneurysms much more safely and effectively than was possible without the protection provided to the brain by hypothermia: the surgeon was able to occlude the carotid and vertebral arteries for several minutes without damage to the brain. The Toronto workers presented an excellent series of cases showing the importance of this pioneer work in making safer operations on a difficult type of case. Mr. R. H. HANNAH (Liverpol) also reported his experience with hypothermia, and agreed that its use was a most important advance.

Dr. HUGH GARLAND (Leeds) described cases of diabetic neuropathy. Though severe paralysis and pain might develop, the disability was reversible to a surprising extent, and severe paralysis might improve slowly to almost complete recovery with control of the diabetes. Twelve cases were described, and evidence was presented which suggested that the peripheral nerves, the roots, and spinal cord might all be involved, and the term diabetic amyotrophy was considered appropriate.

Interstitial Neuritis

Dr. W. RITCHIE RUSSELL (Oxford), in a paper on the subject of interstitial neuritis, said that this was a diagnosis now rarely made, yet its clinical features were precise. Sciatica, for example, though often connected with a

prolapsed disk, often consisted primarily of an abnormal state of the sciatic nerve. Pressure on a normal nerve was painless, but in sciatica there was local tenderness which must originate in the nerve sheath. There was also a striking intolerance of stretching, and at the same time very little interference with conduction. The brachial neuritis of the busy housewife was another example of interstitial neuritis, and this form demonstrated well the vulnerability of the nerve to even slight compression—thus the fingers were often numb on waking after sleep. The careful analysis of the symptoms and neurological signs still gave more information than any other method.

Mr. DICKSON WRIGHT (London) described cases of a spinal cord syndrome developing many years after cervical laminectomy. These were temporarily relieved by spinal traction, and he described a new operation for stabilization by inserting a tibial bone graft into the *anterior* aspect of the bodies of the vertebrae from C 2 to T 2, approach being obtained through a lateral vertical incision in the neck.

SECTION OF OBSTETRICS AND GYNAECOLOGY

Tuesday, June 21

Antenatal Care

The president of the Section, Professor DUGALD BAIRD (Aberdeen), took the chair when Dr. DOUGLAS W. FREW (Edmonton) delivered a paper entitled, "What is Adequate Prenatal Care To-day?" Dr. Frew said that much prenatal care to-day was routine and inadequate. The measure of adequacy was that it enabled the woman to complete her pregnancy, labour, and puerperium without physical or psychical mishap, and with a healthy baby. Psychic stress might be an important causative factor in obstetric complications, for the female generative system was especially sensitive to psychosomatic influences. Prenatal care must therefore include education in the emotional as well as the physical field. The obstetrician had to steer a course midway between teaching that labour was painless on the one hand, and relying overmuch on anaesthesia and interference on the other. His object must be to allay fear and to give the patient confidence in herself as well as in her attendants. This was not a new concept, but it was one which had been neglected. It demanded from the doctor a certain flexibility to meet varying types of patients, but above all it required personal and often time-consuming attention to detail. The physiological nature of pregnancy was to be emphasized, but yet not so overstressed that the patient might be disillusioned in labour. Relaxation exercises might benefit the woman physically, but, more important, they increased her confidence. It was important to seek out and to put in proper perspective for the patient any false ideas she might have gathered from pseudoscientific articles in popular magazines. The pregnant woman should be instructed to recognize the symptoms and signs of the onset of labour, and she should be prepared for the procedures, often disconcerting, of the admission room and labour ward. The good results of such comprehensive prenatal education were to be seen in lowered complication rates, in diminished demands for anaesthesia and analgesia, and in the condition of the baby at birth. In summary, obstetrics must remain an art, in the practice of which the doctor must pay due heed to psychical as well as physical factors.

Fertility After Tubal Pregnancy

Mr. S. BENDER (Chester) reported on an inquiry into the conception rate subsequent to tubal pregnancy, the factors affecting this rate, and the outcome of the pregnancies. He had followed up 264 out of 305 women operated on for tubal gestation in 1946–52. Forty-four per cent. of those followed up had became pregnant again, but only 32% had produced a living baby. A second ectopic gestation occurred in 16% of those who conceived again, a rate almost 50 times that of the general incidence.

The conception rate was notably higher in patients under 30 years of age at the time of operation than in older women, but parity did not seem to be a pertinent factor. The most interesting analysis was of the conception rate as related to the type of operation. In particular a higher proportion of women became pregnant again after salpingo-oophorectomy (57%) than after simple salpingectomy (43%). This might be because when the homolateral ovary was removed together with the pregnant tube, ovulation was thereafter confined to an ovary which had a tube adjacent; whereas after simple salpingectomy the ova from the homolateral ovary were unlikely to be fertilized in the absence of an attendant tube.

Mr. Bender made a plea for the wider use of salpingotomy, especially where the non-pregnant tube was blocked, for attempts at opening such blocked tubes were rarely successful. Thorough peritoneal toilet, routine post-operative chemotherapy, and the early performance of a further tubal patency test were all advocated for the patient who was anxious to become pregnant again after her ectopic gestation.

Spontaneous Abortion

Dr. CARL TUPPER (Halifax, N.S.) read a paper entitled "Spontaneous Abortion—a Combined Approach." He said that 109 women with threatened abortion had been investigated from physical and psychological aspects. No treatment other than rest and sedation was given, and almost half of the pregnancies continued to term. Dietetic deficiencies, uterine abnormalities, mild hypothyroidism, and low levels of vitamins C and E were no commoner among those threatening to abort than among women with normal pregnancies, nor did these factors apparently influence the outcome. Hormone assays suggested that the prognosis was better when hormone levels were high; nevertheless, abortion might ensue, while in other cases the pregnancy continued despite very low levels. They had found certain personality changes more often in women threatening to abort, and he was sure that psychiatric support and reassurance helped these patients and their pregnancies. Finally, Dr. Tupper discussed certain microscopic degenerative changes seen in the placenta of those who aborted, and speculated on the possibility of their being related to hormonal, allergic, or emotional causes.

Diabetes and Pregnancy

Mr. J. H. PEEL (London) discussed "The Management of the Diabetic Patient in Pregnancy." He said that the obstetrical interest in these cases lay in relation to both maternal and foetal problems, still partly unsolved. Modern methods had reduced the maternal mortality to less than 1%, but the foetal loss had remained high—it was 27% in his last 300 cases. In deciding whether therapeutic abortion was indicated in any case, the family history of diabetes, the presence of vascular complications, the co-operativeness of the patient, the previous obstetric history, and the size of the family had all to be considered. The main problems antenatally were the high incidence of hydramnios, toxaemia, and intrauterine death. The foetal loss was apparently not related to the severity or duration or age of onset of the maternal diabetes, but the presence of toxaemia or hydramnios seriously prejudiced the chances of the baby's survival. A clinical trial of large doses of oral stilboestrol and ethisterone had not borne out claims that their administration increased the foetal salvage.

Mr. Peel then referred to his experience with hormone assays in these cases. It had been found that an abrupt fall in pregnanediol output after the 32nd week of pregnancy often foretold perinatal death of the baby. He advocated the premature termination of pregnancy in diabetes before the 37th week, with caesarean section being accorded a larger place than induction of labour. Finally, he dealt with the problem of neonatal death, which most often occurred in the first 48 hours. Congenital malformations and foetal hypoglycaemia were relatively unimportant, but hyaline membrane disease was a very common finding in

these cases. He speculated whether this might not be a sequel to earlier intrauterine anoxia, and said that currently the haemoglobin concentration and the oxygen saturation of the cord blood in the babies of diabetic mothers were at present being investigated.

Induction of Labour

Dr. OTTO A. SCHMIDT (Winnipeg) read a paper on "The Induction of Labour—its Use and Abuse." He remarked how over a five-year period the indications for induction had changed, although toxaemia continued to be the more important indication, while disproportion did not figure in the list at all. His review showed that more elective inductions were being performed, and that rhesus sensitization and postmaturity were becoming more frequent indications. He pointed out that the poor foetal results from induction in cases of rhesus iso-immunization might be because the pregnancy was terminated too late. Induction before the 35th week with early and, if necessary, repeated exchange transfusions had recently produced much more encouraging results. As for elective induction, he considered this justifiable in properly selected cases in suitable surroundings.

Dr. Schmidt said that induction had not increased the risks to the mother, except of post-partum haemorrhage. The extra risks to the baby had been largely due to the poor selection of cases for this method as opposed to abdominal section. The method of induction most commonly used had been rupture of the membranes. Enthusiasm for the intravenous pitocin drip had waned following several mishaps, including one case of rupture of the uterus. He thought it likely that complications following this method of induction were more commonly seen than published, and he therefore believed that the use of intravenous pitocin demanded the close personal attention of the obstetrician in every case.

SECTION OF OCCUPATIONAL MEDICINE

Tuesday, June 21

Industrial Morbidity Statistics

With the president, Dr. JOHN ROGAN (London), in the chair, Dr. A. H. SELLERS (Toronto) described the techniques employed by the Department of Health, Ontario, to obtain comparable morbidity data from different companies in the province. Uniform data were hard to collect because of doubts about the reliability of diagnosis and uncertainty as to whether non-attendance at work was occasioned by sickness or not. It was important that a survey should cover only essential facts. A prominent difficulty was that available morbidity classifications were not satisfactory for use in industry. The collection of data by sex and age groups had provided a useful approach but revealed marked differences between companies. To enable these differences to be assessed with confidence greater attention to the accuracy of population data and the use of standard methods or indices for measuring industrial morbidity were required, and it was desirable to standardize the statistical approach on a national, or, if possible, an international, basis.

In reply to a question by the Chairman, Dr. Sellers said that at present it was not possible to make statistical use of much of the data collected by Canadian companies. Dr. J. G. CUNNINGHAM (Toronto) strongly supported Dr. Sellers's plea for a wider agreement on the data which should be collected.

Susceptibility to Noise

Dr. J. E. GOODWIN (Toronto) recalled that noise-induced hearing loss was insidious in onset, of the "nerve" type, and largely irreversible. It was now recognized that levels of noise which were formerly regarded as innocuous could produce hearing loss, that the high-frequency components were more damaging than low tones, and that protective devices could eliminate the hazard in most industries if they were fitted correctly and worn when needed. He described experiments by Mr. John Gallagher and himself in which the loss of acuity of 60 subjects exposed to controlled "white" noise for 10 minutes at 115 db above threshold was determined. At 4,000 cycles per second there was a marked bimodal distribution which was highly significant, and divided the subjects into noise-hyposusceptible and noise-hypersusceptible groups. No subject was resistant to noise in one ear and susceptible in the other, and the loss of hearing was reproducible on re-testing. Further evidence of a bimodal distribution suggesting two varieties of cochlear response had been obtained in a steel-fabricating shop where the overall noise level varied from 96 to 126 db above threshold. Other observers had suggested that temporary deafness produced experimentally might be related to permanent hearing loss caused by prolonged exposure. This hypothesis had been tested with 12 normal subjects who were examined before and after three months of daily exposure to noise. The results suggested that it might be possible to predict susceptibility to damage by sustained noise by means of a brief test consisting of exposure to noise under controlled conditions.

Dr. H. GRAHAM ROSS (Montreal) inquired whether adequate protection could be afforded to workers near to the jet-engine beds in aircraft factories. Dr. Goodwin replied that in this very severe situation even well-fitted ear plugs and ear muffs would probably not provide complete protection. In reply to another questioner, he agreed that the reason for there being two groups differing in susceptibility was still obscure, and added that it still had to be shown that the bimodal distribution applied to permanent as well as to temporary hearing losses.

Resuscitation in Industry

Dr. R. W. URQUHART (Toronto) reminded the Section that shocks from electrical sources of upwards from 110 volts might cause fatal loss of consciousness and described the clinical features. The main theme of his paper was to emphasize the crucial importance of beginning artificial respiration promptly and of continuing resuscitative efforts without cessation until rigor mortis—the only certain sign of death in these cases in his opinion—set in. In a recent series, 448 out of 627 patients (71.5%) recovered with artificial respiration, and an apparently dead man had been revived after eight hours of artificial respiration. It was estimated that about 80% recovered if artificial respiration was started immediately (within 3 minutes) and only about 20% when there was a greater delay.

All employees in industries where electrical accidents were at all likely should be trained in an efficient method of artificial respiration. Dr. Urquhart favoured the Schäfer method, since it was easy to apply and less distressing to a man severely shocked, even though the volume of tidal air was less than with the Holger Nielsen method. Inhalators were usually not at hand when required. It was important to keep the patient warm throughout, and he considered stimulating injections valueless, while some, such as adrenaline, were dangerous.

In the ensuing discussion several speakers referred to the need for medical officers to know more about methods of artificial respiration and their application. Dr. ROGAN placed greater emphasis on the diminished tidal volume associated with the Schäfer method than Dr. Urquhart; the Holger Nielsen method was taught in the British coal-mining industry.

Sickness Absenteeism

Dr. J. H. BAILLIE (Toronto) considered that the adaptation of workers to the industrial environment had not kept up with the pace of industrialization in modern times, and that their health—or "physical, mental, and social well-being"—had suffered as a result of this. Sickness absenteeism might be used as an index to the success with which a working community adapted itself to its environment. He based his remarks on experience with 32,000 employees in the Bell Telephone Company of Canada, in which "incidental" absence (up to eight days) and "benefit" absence (over eight days) were recorded accurately, since between them

they cost the company nearly $2,000,000 a year. A survey had shown a wide town-to-town variation and also a department-to-department variation. These variations were not explainable on the basis of medical diagnosis, but were attributable more to differences in managerial skill and department leadership. Repeated absences by a small proportion (25%) accounted for much (80%) of the total absence. After examining the reasons in greater detail, Dr. Baillie suggested that medical departments could assist management (1) by providing adequate quarterly medical reports, and (2) by encouraging managements to keep accurate records, and to recognize work well done. Since these methods had been instituted in his company sickness absenteeism had gradually decreased, and although the medical department took some of the credit, the increased interest of the management was the major factor responsible. In reply to one questioner, he agreed that the institution of the five-day week some years ago probably also contributed to this improvement, and, in reply to another question, he said that home visiting was only carried out by his staff at the request of the management when there was a valid medical reason. He would not allow them to act as part of a "gestapo" for investigating absenteeism in general, since this would almost certainly undermine the workers' confidence in the medical service. He did not think further disciplinary measures, such as one-day certification, would help; that would only make more work for the doctors.

The Doctor and the Management Team

Dr. ROGAN relinquished the chair to Dr. H. GRAHAM ROSS (Montreal) and read a paper for Dr. J. J. O'DWYER (London), who was prevented by sickness from attending. The paper reiterated many points made by the previous speaker, and alluded to the ill-defined terms of reference of the doctor in industry, who had to bring the disciplines of clinical and preventive medicine to bear at the same time. The former, however, often provided the essential clue to the need for the latter and made the doctor aware of the working environment and the way it affected the worker. A well-equipped medical centre run by a trained nurse would not only reduce the proportion of workers requiring hospital out-patient treatment for minor injuries to a negligible level but also exercised a beneficial influence on the whole sickness-absentee situation. The doctor could learn much from the technical experts and the workers as well as from the management once he accepted his role as an adviser to the executive; and he could do much to gain the confidence of men and women of both sides and help to ease group tensions.

SECTION OF OPHTHALMOLOGY

Monday, June 20

The Fundus as a Guide to Prognosis

With the president, Mr. J. W. TUDOR THOMAS (Cardiff), in the chair, Mr. JAMES H. DOGGART (London) spoke about various vascular changes revealed by ophthalmoscopy. He emphasized that in some cases, notably in patients suffering from Coats's disease, the condition of the vessels gave a clue to the future of the affected eye alone, because Coats's disease was a unilateral lesion occurring in healthy young people, especially males. Eales's disease, on the other hand, was likely to affect the second eye, even though the physical signs might first be limited to one side. Most important of all, he said, were those changes in the fundus vessels which shed light upon other parts of the body, as in cardiovascular disease, diabetes, haematopoietic maladies, and many other abnormal states. Mr. Doggart went on to stress the importance of collating ophthalmoscopic phenomena with the medical history and with the facts gleaned from examination of the patient's other organs and systems.

Corneal Grafting

Mr. J. W. TUDOR THOMAS mentioned some of the difficulties which confront a surgeon who has to select cases for corneal grafting. The most favourable, he said, were those in whom the eyes appeared to be healthy apart from corneal opacity. Even within this limited range, however, the prognosis varied widely. Thus the chances were relatively good in corneal dystrophy, excepting Fuchs's endothelial dystrophy, but certainly not as good in opacity arising from chemical damage. Aphakia, he said, was another unfavourable factor. Mr. Tudor Thomas pointed out that prognosis must often be guarded, because impaired transparency of the cornea precluded detailed examination of the inner eye. Nevertheless, valuable information could often be obtained from subjective tests and from double transillumination. Then again the clinical course was often illuminating. Keratic precipitates, for instance, might well be concealed by an opaque cornea, but their presence might be inferred from recurrent attacks of ocular pain and redness in the absence of kerato-conjunctivitis, simply because iridocyclitis would be the most likely explanation for such flare-ups. Deafness, he said, need not debar a patient from operation, because it was easy to give preliminary instruction in tactile signs which enabled any intelligent subject to co-operate. He also maintained that operation in early infancy might become important when vision was obstructed by dense opacity of both corneae.

Operative Treatment of Abducens Palsy

Mr. I. LLOYD JOHNSTONE (Worcester) summarized his operative results in 21 cases of sixth cranial nerve palsy. Some were congenital and others arose from vascular crises or from trauma. In most of the patients he performed recession of the internal rectus and resection of the external rectus, together with the Hummelsheim–Temple-Smith–O'Connor operation, in which slips from the superior and inferior rectus muscles were inserted into the paralysed external rectus. His usual practice, he said, was to wait for six to twelve months in the hope of spontaneous recovery. He was well aware that some authorities were sceptical about the efficacy of these strips taken from the vertically acting recti. Critics of Hummelsheim's device attributed the successful results to (*a*) recession and resection of the internal and external recti, (*b*) the freeing of adhesions, and (*c*) the passage of time. Nevertheless, Mr. Johnstone insisted that the technique followed by him offered a good chance of improvement in selected cases. His paper was illustrated by still photographs and a film.

Chordomata of Ocular Interest

Dr. CHARLES DYSON (London, Canada) reported ocular chordoma in a 57-year-old male who died of bronchopneumonia two months after his second operation. Originally he was diagnosed as a case of pituitary tumour, but, as the speaker pointed out, such a mistake was common in those rare neoplasms originating from vestiges of the notochord. Dr. Dyson's paper was illustrated by excellent slides, and he reviewed the relevant literature. He stressed the tendency of chordomata to implicate cranial nerves, to destroy bone, and to display local malignancy, though metastases, he said, had more than once been recorded. Although these tumours originated in the midline, involvement of the cranial nerves was at first unilateral, and those most liable to be attacked were, in order of frequency, the sixth, the second, the third, the fifth, the seventh, and the fourth.

Results of Cataract Extraction

Dr. HOWARD N. REED (Winnipeg) surveyed the evolution of cataract surgery since Daviel first performed lens extraction in 1752. He pointed out that the modern custom of elaborate records and follow-up investigation of patients facilitated comparison between rival originators of technique. In his own series of 180 cases he found no significant difference in result between those in whom the section was made with a cataract knife, and the remainder whose lenses were exposed by means of the keratome and scissors. Having then referred to results published by several other operators, he concluded that small variations in technique

did not materially influence the visual outcome after cataract extraction. Finally, he stressed the significance of Ridley's intraocular acrylic implant in the future of lens surgery.

Diseases of the Meibomian Glands

Dr. C. D. BAIRD (Chatham, Canada) dealt with the comparative anatomy of the Meibomian glands, and discussed the aetiology of chalazion, their commonest disease. The tendency of chalazia to recur, together with the fact that they are so often associated with blepharitis, would appear, he said, to indicate an infectious origin, but he discounted earlier theories that they might be tuberculous. Dr. Baird went on to consider in detail the treatment of chalazion and of multiple meibomitis, and insisted that, in the triad of chronic conjunctivitis, blepharitis, and meibomitis, therapy applied to the Meibomian glands was too often neglected. It was essential in such cases, he said, to milk out the contents of the glands by careful compression of the marginal portion of the eyelids. Next he dealt with epithelioma of the Meibomian glands, a condition which in its early stages might closely simulate chalazion. Finally, he described Meibomian infarcts, which present as bright yellow spots of inspissated secretion visible through the palpebral conjunctiva.

SECTION OF ORTHOPAEDIC SURGERY

Wednesday, June 22

Replacement of Bone by Internal Prostheses

The first session was devoted to short papers, with the president of the Section, Mr. PHILIP WILES, in the chair, and to a symposium on traumatic paraplegia, with Dr. A. T. JOUSSE (Toronto) in the chair.

Mr. H. JACKSON BURROWS (London) reported an experiment in conservative surgery, demonstrating by lantern slides patients with major replacement of bone (carried out by the staff of the Institute of Orthopaedics, University of London, and the Royal National Orthopaedic Hospital) who had been kept under observation for more than three years. In two patients with severe disintegration of the skeleton of one lower limb from fibrous dysplasia, amputation at the hip had been avoided by amputation through the thigh and substitution of the stump of the femur by an internal prosthesis. After five years and eleven months and after four years and four months, these patients were at full work. One of these patients had required reamputation. Radiopaque fluid put into the hip-joint outlined the whole prosthesis, which was enveloped by a fibrous sleeve having a smooth synovium-like lining. In two patients with potential chondrosarcoma of the humerus and femur respectively, the tumour had been excised extraperiosteally with more than half the bone and replaced by a prosthesis, the distal half of the limb being preserved. After five years and one month and three years and nine months, the patients were at full work with reasonable function. The big problem in these cases was eventual insecurity of the junction between prosthesis and bone, a problem being studied experimentally by Dr. J. T. Scales.

In answer to a question by Dr. R. I. HARRIS (Toronto), Mr. JACKSON BURROWS explained that the excised segment of bone in the last two cases had not been boiled and replaced, because dead bone took a long time for complete substitution, during which fracture was common; cadaveric transplants also had been considered and rejected for the same reason.

Management of Acute Nerve Injuries

Dr. J. E. BATEMAN (Toronto) recalled that post-traumatic changes in a nerve, especially retrograde degeneration, depended upon the type of injury. Diagnostic aids included the electromyograph and an instrument for demonstrating the sweat-free skin areas by their changed electrical conductivity. Suture technique was improved by an efficient neurotome and, in some cases, by combining silk suture with the use of plasma. The time for suture depended *inter alia* upon the state and extent of the wound, assessment of intraneural damage, adequacy of surgical facilities, and postoperative needs. Operations for nerve injury should usually precede operation for a fracture, because less likely to promote infection, because the bone defect might assist approximation of the nerve ends, with or without transposition, and because nerve regeneration could proceed while bony reconstruction was progressing. In brachial plexus injuries with much motor and sensory loss, early exploration might avoid some of the severe fibrosis and also the time wasted in vainly hoping for recovery, with consequent loss of income and morale. Operation was easier with the patient seated. In Volkmann's contracture, fairly localized nerve injuries were sometimes caused by pressure—not pure ischaemia—and demanded early exploration. In post-operative care of nerve injuries, electrical stimulation was important.

Mr. J. M. P. CLARK (Leeds) favoured early nerve suture after division in a finger or at the wrist, and early exploration of the injured brachial plexus.

Peripheral Vascular Surgery from the Standpoint of the Orthopaedic Surgeon

Dr. J. M. JANES (Rochester) spoke of the recognition of occlusive and traumatic ischaemia and such methods of treatment as sympathectomy, arteriectomy, embolectomy, vascular grafting, and amputation. In supracondylar fracture in a child with obliteration of the radial pulse, restoration of circulation after manipulation was sometimes temporary, so that it was safer to explore the brachial artery and treat it by papaverine sulphate, arteriectomy, completion of a partial division, or ligation, according to the condition found. The elbow was rested below a right angle, without fixation; and the trunk, but not the limb, was warmed. Main vessels might be ruptured in dislocation of the elbow or the knee, demanding ligation. Injury to the popliteal bifurcation in fracture of the upper end of the tibia usually led to amputation, but an effort should be made to save the limb. The danger of tight plasters was recalled.

The overgrowth of a limb associated with an arteriovenous aneurysm could be corrected by epiphysial stapling, and conversely—and more disputably—an arteriovenous aneurysm had been artificially established to promote growth in the shortened limb of poliomyelitis.

Dr. W. T. MUSTARD (Toronto) approved arteriectomy in some cases of arteriosclerosis; was of the opinion that, after supracondylar fracture, too much attention had been given to the radial rather than the ulnar pulse; and did not believe that papaverine had any effect upon the blood vessels.

Chemotherapy of Tuberculous Joints

Mr. J. P. JACKSON (London) discussed the problem of mobility in tuberculous joints. With the normal criteria of healing, relapse occurred in 21% of the 195 patients with joint tuberculosis treated in Harlow Wood Hospital between 1949 and 1952. Ninety-one who received systemic streptomycin with P.A.S. or isoniazid were considered in more detail, 37 having intra-articular streptomycin and P.A.S. The disadvantages were sepsis, pain, and spontaneous fusion: 45% of joints remained mobile. The chief influences affecting results appeared to be age (50% mobile in children and 33% in adults) and bone destruction (mobility in 75% with synovial infections, and in only 34% with bone destruction). Intra-articular administration had shown little advantage. Relapse occurred in 20% of mobile joints, compared with 6% of those fused by bone.

The Thomas Splint

Dr. GEORGE F. PENNAL (Toronto) gave a happy and brief account of Hugh Owen Thomas and some details of the splint he used for tuberculosis of the knee. He mentioned how, through the advocacy of Sir Robert Jones, the mortality from gunshot wounds of the femur had been reduced from 70% to 5% in the first world war, and finally

described the approved method of using the splint in conjunction with strapping extension for fracture of the femoral shaft. The surfaces of a mobile joint were often irregular, so that osteoarthritis might be expected later. Mobile joints should be allowed only if the dangers were understood and constant supervision possible.

Dr. HUGH COULTHARD (Weston, Toronto) said that he had had much better results since prolonging antibiotic treatment up to 15–24 months. He agreed that mobile joints were more often obtained in children, and when evident bone involvement was absent.

Internal Fixation of Fractures

Mr. H. H. LANGSTON (Winchester) stressed that the real aim of internal fixation was unrestricted treatment of the soft parts from the time of injury, and consequently a more rapid, sure, and complete restoration of function. He advocated a periodic careful review of results. Some fractures, such as those of the clavicle and of the humoral neck, required little or no fixation and certainly not open fixation. Some fractures, usually involving joints, such as fracture of the neck of the femur, Monteggia's ulno-radial fracture-dislocation of the elbow, and the fracture of the radial shaft below its middle with radio-ulnar subluxation, demanded internal fixation without doubt. Internal fixation was usually conceded to avoid prolonged recumbency—for instance, after pertrochanteric fracture. Finally there were fractures whose immobilization by external splinting would involve prolonged immobilization of major joints—for instance, fractures of the femoral shaft, and, especially, the tibial. For these he advocated fixing with a six-screw slotted plate. Free movement of the adjacent joints was allowed for four weeks, after which walking started in a plaster.

Dr. L. W. BLACK (Toronto) did not share Mr. Langston's abhorrence of the Kuntscher nail for all but high femoral fractures, or of screws for oblique tibial fractures; screws could be inserted with the least periosteal disturbance. Questioning the advisability of allowing weight-bearing in a month, he was informed that Mr. Langston allowed this only partially in oblique or comminuted fractures until there was evidence of union. Dr. J. E. BATEMAN (Toronto) said that he liked to add cancellous bone when plating.

Symposium on Traumatic Paraplegia

Dr. A. T. JOUSSE (Toronto), as chairman, introduced the speakers at a symposium on traumatic paraplegia, and stressed the necessity of teamwork in this condition.

Dr. E. H. BOTTERELL (Toronto), speaking as a neurosurgeon, stressed the real importance of good first-aid and transport (preferably supine). In complete paraplegia from cervical fracture-dislocation, he had never seen useful recovery, and conservative treatment was advised. Myelography was useful in cases of doubt. Thoraco-lumbar fractures should be reduced when it had been ascertained that there were no bony fragments. Hyperextension should not be carried out in cases of fracture-dislocation, because it might precipitate or aggravate paraplegia.

Dr. F. P. DEWAR (Toronto) gave the views of an orthopaedic surgeon and referred to cases with locked facets and extensive ligamentous injury. In fractures of the neck, if reduction and relief of pressure on the cord proved impossible by traction, exploration should be carried out. Early posterior grafting was important, to allow early sitting and standing. In the thoracic region closed reduction was often impossible, and open exploration was necessary. Stable reduction of a fracture-dislocation required no fixation, but otherwise (as in most lumbar cases) a posterior graft, preferably of banked bone, should be applied to as few vertebrae as possible, usually two. Anterior fusion usually occurred later. The patient was raised very carefully on a Stryher turning frame till he got up, after usually three months. Paralysis of the hands in cervical lesions demanded attention, as much could be done to improve function and especially the grip.

Dr. C. ABERHART (Toronto) ascribed some urological complications to early neglect, and he favoured an indwelling balloon catheter of correct size for the patient's urethra. Tidal drainage was adopted until there were signs of recovery. Cystometry was often informative.

Plastic surgery in paraplegia was discussed by Dr. STUART D. GORDON (Toronto), who postponed excising and grafting pressure sores until the patient was apyrexial, eating well, and without spreading infection. Under general anaesthesia, wide excision was followed by application of a very large rotation flap, which was tacked in place with catgut, to avoid dead space. The donor area was treated with split skin. Among 55 patients treated in five years there were 14 recurrences, 10 of which were ischial. Removal of the ischial tuberosity was less favoured than formerly.

Dr. GUSTAVE GINGRAS (Montreal) said that he investigated the psychiatric condition of a large number of paraplegics. Most showed early denial, all suffered depression, and many had intensification of their previous traits. The well-founded sense of insecurity on impending discharge home was emphasized, together with the importance of securing proper management of bladder and bowels beforehand. Only one psychoneurotic and two alcoholics were discovered.

Dr. L. GUTTMANN (Stoke Mandeville), speaking on rehabilitation, referred to the improved expectation of life and function in these cases. Of 1,000 patients admitted to the National Paraplegic Centre, 83 had died, 591 had gone home, 183 had gone to permanent "settlements," and the others had been transferred to other hospitals. Of 774 patients followed up, 405 were fully and 113 partly employed.

SECTION OF OTOLARYNGOLOGY

Tuesday, June 21

Foreign Body Endoscopy

With the president, Mr. V. E. NEGUS (London), in the chair, Dr. DAVID H. BALLON (Montreal) read a paper reviewing foreign body endoscopy over a period of 30 years. He showed slides illustrating a large number of foreign bodies removed at endoscopy and emphasized the importance of early removal. The danger was considerable in the patient drowning from his secretions if foreign bodies were left in the lungs untreated. In the diagnosis, *x*-ray examination was important in two ways: first, skiagrams in full inspiration and expiration should be taken in order to diagnose obstructive emphysema; secondly, a barium swallow might be helpful to the diagnosis of bronchial foreign bodies.

Dr. D. E. STAUNTON WISHART (Toronto), opening the discussion, mentioned the range and variety of foreign bodies encountered at the Toronto Children's Hospital. Hard foreign bodies in the air passages might suddenly become dislodged and cause death from asphyxia. As to the danger of overlooked foreign bodies, Dr. Wishart quoted Chevalier Jackson's aphorism, "All that wheezes is not asthma." He suggested that a general anaesthetic was not only safe but was indicated in children.

Mr. TERENCE CAWTHORNE (London) mentioned two unusual types of case: (1) a small child with a large oesophageal foreign body causing respiratory obstruction as the main symptom; and (2) sharp foreign bodies which might be swallowed and which ultimately arrived in the rectum.

Mr. R. A. ELLIOTT (Wellington, N.Z.) gave it as his opinion that modern methods of anaesthesia had been the greatest advance in the treatment of foreign bodies. He drew attention to the value of relaxants in this connexion.

Dr. J. B. WHALEY (Toronto) advocated general anaesthesia, and the president of the Section also gave it as his view that general anaesthesia and relaxants should always be used for oesophageal foreign bodies.

Cobalt Therapy

Dr. R. E. GREENWAY (London, Ontario) gave an account of the results of treatment of cases of malignancy of the

nose and throat since 1951, when the cobalt-60 became available. He had a difficulty in assessing results because so many very advanced cases presented themselves for treatment, and these had to be classified as "palliation" cases. Methods using the cobalt bomb seemed to give rather hopeful results in growths of the nasal sinuses, and the same applied to malignant growths of the tonsils. But with cancer of the nasopharynx the results up to date were apparently no better than with other methods.

Dr. CLIFFORD ASH (Toronto), in opening the discussion, said that cobalt-60 must be looked upon as only another source of gamma radiation. Its main advantage lay in the fact that a high depth-dose could be obtained in relation to a low skin dose. A disadvantage was that the exit dose was high, so care had to be taken of surrounding tissues. Experience with the method was very limited and not fit for statistical study.

Dr. PERCY E. IRELAND (Toronto) thought that cobalt might turn out to be dangerous in nasopharygeal cases because of the effect on the pituitary.

Dr. BASIL V. BRADLEY (Toronto) recalled a case treated by cobalt, and subsequently by radium implantation, which had required division of the ninth cranial nerve for the relief of pain. The president said he was disturbed that it was thought necessary to introduce a new radioactive medium like cobalt, since excellent techniques with radium and *x* rays were already available. He feared that a violent method might supplant gentler techniques which were well established.

Clinical Testing of Vertigo

Dr. JOSEPH T. A. SULLIVAN (Toronto) presented a paper on behalf of himself, Dr. W. H. JOHNSON, and Dr. J. K. BRYDON SMITH. He pointed out that on a basis of symptoms there was difficulty in distinguishing true vertigo from syncope, that the tests were uncertain, that knowledge of the anatomy of the internal ear was inaccurate, and that little was known about the circulation of the endolymph. In the work carried out by himself and his associates, a standard history was considered very important. He described a special method of observing nystagmus through spectacles carrying a grid over one eye. His research clinic had investigated 300 patients in two years and had introduced a number of modifications of old existing tests. An innovation was the rotation of the subject in a supine position about a vertical axis, with head rotation in addition in two alternative planes of space.

Dr. W. J. MCNALLY (Montreal), in opening the discussion, said that the cochlea had taken the limelight in recent years, so it was refreshing that Dr. Sullivan was looking at vestibular apparatus. He pointed out that the methods described were those of the research clinic and that it was not essential for practising otologists to carry out all of the tests. On the other hand, careful laboratory estimate of clinical testing was always needed. The utricle was very poorly understood and the literature about it sparse. Mr. TERENCE CAWTHORNE (London) also spoke of the importance of picking out clinically useful tests from among those used in research departments. He drew attention to the fact that peripheral vestibular disorders often were not accompanied by hearing loss. In a series of 117 cases showing positional nystagmus, 60% showed no diminution of hearing. These, he thought, had a utricular lesion. A practical difficulty of testing the labyrinth was that this must be carried out by a medical man. He made an appeal for a supply of temporal bones for research departments, particularly of those from patients who had exhibited vertigo as a symptom during life.

Air-Conditioning Mechanism of the Nose

The president invited Dr. G. E. TREMBLE, one of the vice-presidents, to take the chair while he read his paper on the air-conditioning mechanism of the nose. He first described a study of the nasal organ of fish, with particular reference to the distribution of olfactory mucosa and of secretory epithelium. In the nose of mammals there was typically an anterior air-conditioning part and a posterior olfactory region. Observations of a representative series of mammals revealed a correspondence between the olfactory and the humidifying areas, and indicated a relation between the two, both areas being small in species with feeble powers of scent and extensive in keen-scented animals. The epithelium generally known as respiratory was found to be of two types, one ciliary and the other thin and permeable. Mr. NEGUS'S conclusion was that the present views on nasal physiology required readjustment.

Dr. G. A. HENRY (Toronto), in thanking the president for his address, drew attention to the close relationship between the olfactory and respiratory mechanisms. It was important to appreciate the new conception given by Mr. Negus of the function of the maxillo-turbinal, but nevertheless it was incumbent upon otolaryngologists to continue to be conservative when dealing with the nasal mucous membrane.

SECTION OF PREVENTIVE MEDICINE

Monday, June 20

Upper Respiratory Tract Infections

With the president, Professor L. P. GARROD (London), in the chair, a discussion on the "Epidemiology of Upper Respiratory Tract Infections" was opened by Professor R. CRUICKSHANK (London), who first showed from data collected from general practice, from the 1,000-family study in Newcastle, and from the report on epidemics in public schools, that respiratory infections were responsible for 30 to 50% of illness that required medical attention or resulted in sickness absenteeism from school or work. After defining such syndromes as the common cold, chronic catarrh, sore throat, and influenza, he reviewed some of the studies carried out at the Common Cold Unit, Salisbury. The common cold was due to a filtrable agent, about 30–70 mμ in size, which could produce infection in 50 to 60% of human volunteers by nasal drops of the "cold" secretions, and could be passaged through many generations of these human guinea-pigs. Nasal washings were infective 24 hours before the onset of clinical symptoms, and infectivity persisted for some days afterwards, but colds quickly died out in isolated communities like Spitzbergen or in the crews of exploring ships. Yet there was evidence for the existence of healthy carriers of the cold "virus." Spread of the infection could be by close social contact or through the air to susceptible persons some distance away: spread by hands and inanimate objects was less likely, and the "virus" was easily destroyed by natural drying of infective secretion.

Professor Cruickshank then described some results obtained from an epidemiological study of respiratory infections among families of uniform size (two parents and three children) living in the working-class borough of Paddington, London. Fortnightly visits were made to some 50 families over a period of two years; while all illnesses were recorded, particular attention was paid to respiratory infections such as colds, catarrhs, sore throat, etc. Nose and throat swabs were taken from all members of the family at each visit and were examined for pneumococci, *Staphylococcus pyogenes*, haemolytic streptococci, and capsulated *Haemophilus influenzae*. From analysis of the data it could be seen that the incidence of the common cold was highest in the preschool child with 4 to 5 colds per annum, schoolchildren and mothers had 3 to 4 colds, and fathers had 2 to 3 colds each year. Infection was most commonly introduced by the preschool child, and the highest secondary attack rate was in schoolchildren. The incidence of colds and catarrh showed an increase with overcrowding, but there was no correlation with such factors as parental care, household hygiene, feeding habits, nutritional state, or father's occupation. There was some evidence that the first autumn crop of acute respiratory infections was related to a sharp drop in temperature. From a great mass of bacteriological data it could be noted that the incidence and spread of pneumococci in the upper respiratory tract showed some correlation

with the degree of crowding and that the increased incidence of pneumococcal carriers associated with the common cold occurred *after* the onset of clinical symptoms.

On the preventive side, the risk of spread might be lessened by early isolation of pre-school and schoolchildren with colds, while high standards of personal hygiene should be encouraged. But air disinfection was not likely to do much good.

Acute Respiratory Disease

Dr. G. DEMPSTER (Toronto) discussed recent progress in the differentiation of the febrile catarrhs [or "acute respiratory disease" (A.R.D.) of American workers] and the atypical pneumonias. Q fever, psittacosis, and primary atypical pneumonia could with laboratory help be diagnosed as specific entities, and a great step forward had been taken with the isolation by tissue culture of a new virus (R 1–67, now type 3 of Huebner) from cases of A.R.D. A whole family of new viruses antigenically related to R 1–67 had been isolated from tonsil and adenoid tissues and from patients with different clinical syndromes. Human volunteers could be infected by the conjunctival route and the affected patient developed unilateral conjunctivitis, pharyngitis, and adenitis. This group was now called the adenoidal-pharyngeal-conjunctival, or A.P.C., viruses. Meanwhile Dingle and his co-workers had shown by retrospective testing of paired sera that the A.R.D. which was so common among American army recruits was also due to the R 1–67 (type 3) virus.

Dr. Dempster then described his findings with clinical material collected from various sources in Ontario, using techniques for direct isolation of the virus or for demonstrating complement-fixing antibodies in the patients' sera. While infection due to the A.P.C. viruses seemed to be relatively rare among the investigated cases and outbreaks in the past two years, sera from an earlier period showed evidence of infection in four out of nine cases of "atypical pneumonia."

In the general discussion Dr. E. CHANT ROBERTSON told of her experience in the Children's Hospital with ultraviolet light screens between cubicles, which were effective in reducing respiratory infections among infants to one-third of the incidence among a control group, while an irradiated "ceiling" reduced such infection by one-half. In answer to questions, Professor CRUICKSHANK said there was rather negative evidence about the transmission of the common cold by handshaking or by the alimentary route. He did not know if the pneumococci played an important part in the purulent discharges, as they had not done any chemotherapeutic trials. Among the "sore throats" in their Paddington families, group-A streptococci were isolated from about one-quarter of the cases.

Teaching Preventive Medicine

Dr. G. R. F. ELLIOT (Vancouver), in discussing the "Teaching of Preventive Medicine in Canada," showed the great variations in time and staff allocated to this subject in the undergraduate curricula of Canadian medical schools. He felt that public health medical officers and teachers of preventive medicine were too isolated from, and rather looked askance at by, practising doctors. He wanted to see the teaching department strengthened to three full-time members, one of whom must be a medical bio-statistician, since this was a subject that was very poorly taught or not taught at all in medical schools. A biostatistician would also help other departments in planning clinical or experimental studies. The student must know the community and its resources, including its social and welfare services, if he was to play his full part as a family doctor. He must also be taught what are the important diseases resulting in "life years lost"—for example, diseases of early infancy and accidents were much more important in this respect than heart disease or cancer. He recommended that some 200 hours be allocated to the teaching of preventive medicine, spread through the curriculum, that most of the teaching be done by full-time members of the staff, and that there be a much closer relationship with clinical teaching departments, with the medical profession generally, and with governmental and voluntary social services.

There was a lively debate after Dr. Elliot's address, even although most of the audience had already sat through six to seven exceedingly warm hours of medical discussion.

SECTION OF PSYCHIATRY

Tuesday, June 21

Statistical Aspects of Suicide

The president, Professor AUBREY LEWIS (London), read the opening paper from the chair on the "Statistical Aspects of Suicide." He pointed out that statistical inquiries showed that the ascertained frequency of suicide remained relatively constant in any given population over any period in which no great social changes had taken place. The sociological approach, associated with the work of Dürkheim, had exerted lasting influence, the value of which was well shown in two recent studies in South-east Asia, by Murphy in Singapore and Straus and Straus in Ceylon. In both these studies remarkably different suicide rates in different ethnic groups had been observed. It became apparent in such studies, as also in Sainsbury's recent investigations in London, that suicide was much more directly connected with the relationship of the individual to the community than it was with his economic status or the material conditions in which he lived, as shown for example by overcrowding.

Investigations were, however, hampered both by the difficulty in ascertainment of social, medical, and psychological detail, and by defects in social theory and methods; further progress depended upon the realization of the necessity for give-and-take between socio-statistical studies and clinical and psychopathological studies of individuals.

Psychopathology of Suicide

Dr. A. E. MOLL (Montreal) dealt with the psychopathology of suicide. He stressed the complexity of the problem and the fundamental importance, in his opinion, of unconscious factors only to be understood with the aid of a psychodynamic approach of a deeper kind. The importance of sadistic and aggressive impulses became apparent when it was realized that these patients were the victims of aggressive impulses turned inwards; suicide could be a defence against homicide. Again, many "accidents" could be regarded as unconscious suicidal attempts, and even minor self-injuries, such as cutting one's finger, could be "fractional" suicide. In his opinion it was possible that similar psychological factors of an unconscious aggressive type, through the intermediary of the autonomic nervous system, might be responsible for much organic disease.

Treatment of Attempted Suicide

Dr. G. C. SISLER (Winnipeg), dealing with the treatment of suicidal attempts, stressed the importance of admission to hospital, preferably in a psychiatric unit, in order to permit a full psychiatric investigation and assessment. He mentioned the misleading impression that could be obtained from the improvement, often only of a temporary character, that could take place after a suicidal attempt. In his experience more than half the attempted suicides were in no sense psychotic. The realization of the importance of the factor of isolation in leading to suicidal attempts had to be borne in mind when planning treatment and aftercare. Difficult problems could arise over the conflicting obligations of the doctor towards the patient and the community, but he was satisfied it was only legitimate to report a small minority of suicidal attempts to the police. Special risks for suicide occurred with depressed patients who were not retarded, in lonely old men, and in women in the puerperium and involutional period. He thought it was often wise to postpone telling a patient that they would need mental hospital care until arrangements for their admission could be made.

Social Studies

Dr. E. STENGEL (London), dealing with the social effects of attempted suicide, said that follow-up studies showed that only a very small proportion of those who have attempted suicide finally succeeded in killing themselves, and there was also evidence that those who did succeed in killing themselves had not often made previous unsuccessful attempts. There was a strong argument in favour of treating those who attempt and those who commit suicide as two different, though overlapping, populations; the former group had been estimated as at least six times the size of the latter, but it was probably larger still. It was important to view attempted suicide as a behaviour pattern of its own, with motivations, often unconscious, of its own, rather than as an unsuccessful or bungled suicide, for it often became clear that self-destruction was not the only purpose or the main objective.

The effects of suicidal attempts, both on the individual and his group, had been studied at the Institute of Psychiatry in London. In some cases the suicidal attempt acted as an alarm signal and secured treatment that had been overdue; and it often brought about significant changes in human relations either by consolidating them or by causing a permanent break. It could also result in a change in the mode of life of the person concerned or those close to him, and in a number of cases it brought to an end a state of isolation.

The incidence of suicidal attempts depended upon a great variety of factors, one of them being the attitude of the society in which the individual lived towards him. There was an appeal, or even an effect of blackmail, about many suicidal attempts, and it was noteworthy that they were rare in a society hostile to the individual and had hardly ever been observed in German concentration camps. When considering the treatment of those who attempt suicide, the objective or hidden message of the suicidal attempt, often not fully realized by the patient, must always be remembered.

Among those who took part in the subsequent discussion were Dr. R. A. NOBLE (Cambridge), who stressed the difficulties that arose from long waiting-lists for mental hospitals, Dr. F. H. VAN NOSTRAND (Toronto), Mr. DICKSON WRIGHT (London), who said that those who attempted suicide should have the benefit of the very best surgery when necessary, and Dr. W. L. NEUSTATTER (London).

SECTION OF SURGERY

Monday, June 20

Hiatus Hernia

With the president, Mr. A. LAWRENCE ABEL (London), in the chair, a series of seven short papers was read. Dr. ERIC M. NANSON (Saskatoon) discussed oesophageal hiatus hernia. After a brief description of the orthodox anatomy, he described the mechanism of control at the cardiac orifice of the stomach, emphasizing that incompetence of the cardia with oesophagitis was a feature of the sliding hernia; while in the para-oesophageal type regurgitation was uncommon. The upper abdominal fullness experienced by patients in this second group was commonly confused with biliary disease. In connexion with the investigation of these cases Dr. Nanson spoke of the value of lateral *x*-ray examination, and of endoscopy with a 53-cm. oesophagoscope. Surgical operation was necessary in a minority of patients, the main indications being persistently troublesome symptoms and complications such as oesophagitis and ulceration. Some old patients with a sliding hernia could be relieved of regurgitation by left phrenic crush, but this was contraindicated in the para-oesophageal type. As to operative repair, Dr. Nanson deplored the present popularity of the thoracic approach, though he agreed it was indicated in fat patients and in those with a fixed hernia or oesophageal ulcer. Otherwise he favoured the abdominal approach, the technical details of which he briefly reviewed. The easier exposure of the lower part of the right crus from the abdomen allowed sound approximation of the crura with unabsorbable mattress sutures.

In the subsequent discussion Mr. T. HOLMES SELLORS (London) stressed that the recurrence rate after operation was fairly high, probably in the region of 30%. In addition to repair of the crura, which could be seen more readily from the chest if the patient was in the face-down position, he thought that the oesophagus should be fixed to the diaphragm. Dr. R. M. JANES (Toronto) said he was impressed by the wide divergence of opinion between various authorities on what was important in the operation. It did seem that restoration of the oesophageo-gastric angle was of value, and he agreed with the previous speaker that the recurrence rate was quite high.

Tumours of the Small Intestine

Mr. IAN FRASER (Belfast) discussed tumours of the small intestine, and showed an excellent series of slides to illustrate his remarks. He compared and contrasted the various diseases of the small intestine with those occurring in the oesophagus, stomach, and colon. Tumours of the small intestine were rare, and he had classified the material collected from 119 cases during a period of nineteen years at Belfast. These included 13 adenocarcinomas and 15 sarcomas, the former being most common in the duodenum. There were also 27 cases of Meckel's diverticulum containing heterotopic gastric or pancreatic tissue or both. Mr. Fraser referred to the carcinoid tumours and cited a case illustrative of the Biörck and Thorson syndrome. He also drew attention to the occurrence of enterogenous cysts and other simple tumours where the gut might be unnecessarily sacrificed.

Mr. A. DICKSON WRIGHT (London) followed with a paper on intestinal obstruction. He spoke as an iconoclast and favoured several procedures which many would regard as unorthodox, including the relief of paralytic ileus by "needling" the gut through the abdominal wall. He favoured the return of all vomitus and aspirated fluids to the rectum together with tap water.

Operation on the Bile Ducts

A vice-president, Dr. C. W. BURNS (Winnipeg), then took the chair, and Mr. C. P. SAMES (Bath) discussed obstruction at the lower end of the common bile duct, emphasizing some of the technical problems of operations on the bile ducts. He believed that a bougie would occasionally pass through the wall of the duodenum rather than the ostium of the common duct. This he attributed to narrowing of the ostium as a result of "constrictive papillitis" and he advocated ampullary "circumcision" for its relief. If there was any doubt about the adequacy of the lumen at the lower end of the common duct he thought that transduodenal exploration should be done.

Intersexuality

Mr. L. R. BROSTER (London) discussed certain aspects of intersexuality, beginning with a brief historical review. He referred to examples in ancient Egyptian and Grecian art and discussed the different attitude to such conditions at that time. It is difficult to do justice to this paper in a summary since the subject was largely discussed by illustrations of specific cases. The speaker referred to the characteristic fuchsinophil staining of the suprarenal, to certain aspects of ketosteroid excretion, and to the soluble and insoluble ketosteroids; he also alluded to the remarkable accuracy of chromosomal determination in deciding a patient's sex.

Ulcerative Colitis

The last two papers concerned the indications for surgery in the treatment of ulcerative colitis and the place of ileo-rectal anastomosis. Dr. E. R. CULLINAN (London) said there was no specific medical treatment. The four cardinal requirements were careful nursing, relief of symptoms, detailed attention to dietary and electrolyte needs, and patience, encouragement, and quiet confidence on the part of those treating the patient. Most of those with the distal

type of disease and no complications could be managed satisfactorily by medical means, and some would recover completely. Some of those with diffuse disease would respond, but in few cases, if any, would complete healing take place. Response to A.C.T.H. and cortisone could not be predicted, although it was more likely to be favourable in those with a severe acute attack. A remission induced in this way could be a valuable preliminary to surgery, but the possible complications should be remembered, especially bowel perforation. Three phases in surgical treatment were outlined. Permanent ileostomy had seemed to be of obvious value in diffuse cases with continuous symptoms, and also in those with complications, whether the disease was of the diffuse or distal type. The difficulty lay in those patients with uncomplicated diffuse disease whose course was unpredictable. As management of the patient and of the stoma itself had improved, it had become clearer that ileostomy *per se* was not a cure. This had led to wider use of colectomy, with improvement in technique and results. Nevertheless, the physician was justifiably reluctant to condemn a patient to permanent ileostomy if this could be avoided. Now trial was being made of a combination of colectomy with ileo-rectal anastomosis, which, if successful, would open up a much more attractive field for surgical treatment. Referring to the work of his surgical colleagues at the Gordon Hospital in London, Dr. Cullinan said that it was too early for final judgment, but the initial results of the last four years were promising. Patients moved their bowels about six times in 24 hours but did not seem to mind this, and it was surprising that the state of the rectum improved rather than deteriorated after operation. If long-term results were good, one would probably advise all those with diffuse disease who did not quickly respond to medical treatment to have a colectomy and ileo-rectal anastomosis.

Mr. A. LAWRENCE ABEL (London) acknowledged the work of his colleagues, discussed the technical details of operation, and reported the results of colectomy and ileo-rectal anastomosis in 42 cases. He summarized the necessary investigations, which included examination of the stools, proctoscopy and biopsy at 11 cm., barium enema, and study of blood count, blood urea, and serum electrolytes. In preparation for operation he especially emphasized the full correction of anaemia and electrolyte balance, the very careful use of antibiotics, and the possible value of A.C.T.H. and cortisone. Those patients who had had a previous colectomy often presented with a stenosed rectum, and those had been dilated with a rubber balloon up to 10-ounce (280-ml.) capacity in all but one case. The speaker then illustrated the technique of operation in a series of slides. Some 2 in. (5 cm.) of rectum was left above the site of peritoneal reflection and an end-to-side anastomosis performed. It was important to close the space behind the bowel in the pelvis and to drain properly. This operation had now been done in 42 cases, 28 of which had been conducted in one stage—with two deaths in this group. Of 17 cases prepared for two-stage operation, three had died before the second stage, but the remaining 14 had been dealt with in two or more stages. Mr. Abel referred to the post-operative management and complications. Leakage had occurred in four patients, one of whom had died. Three patients developed obstruction, and one of these had needed operative relief of a rotated ileal loop. The others had been cured by non-operative means. One patient had an intraperitoneal haemorrhage but recovered. In the majority of cases the rectum had remained granular in appearance on sigmoidoscopy and might bleed on handling.

In the subsequent discussion six Canadian speakers expressed varying degrees of scepticism about the place of this new operation. Dr. P. H. THORLAKSON (Winnipeg) said that if these patients of Mr. Abel's still had their anal sphincters five years after operation it would seem that the procedure was a very real contribution to treatment. Dr. CAMPBELL GARDNER (Montreal) said that much of the success in these cases might be attributable to the personal magnetism of the surgeon. Dr. G. GAVIN MILLER (Montreal) thought that this might be a reasonable risk with good bowel but not with bad. The risk of malignant disease in the rectum was referred to by several speakers. Dr. R. M. JANES (Toronto) fairly summed up the position by saying that he had personally always been against ileo-rectal anastomosis; that he was impressed by Dr. Cullinan's testimony; and that he would await the later results with very great interest. Mr. LAWRENCE ABEL, in reply, thanked subsequent speakers for their comments and said that he would not be put off by what they had said. He emphasized the importance of the psychological factor, and pointed out that they deferred operation in those patients whose rectums did not yet seem fit for it.

Tuesday, June 21

Cancer of the Mouth

With the president, Mr. A. LAWRENCE ABEL (London), in the chair, the Section of Surgery proceeded to a very full programme, beginning with a symposium on cancer.

Dr. ARTHUR L. MURPHY (Halifax), in outlining the treatment of cancer of the mouth, described the relatively rapid rate of growth of certain intraoral tumours and the need for early diagnosis. He favoured a purely surgical approach for most cases and only combined surgery and irradiation in a minority of cases—for example, in those patients in whom previous treatment by one such method had failed to control the disease. For cancers of the lip and floor of the mouth routine neck dissections were not carried out, but if glands were palpable or if resection of the primary growth necessitated mandibulectomy the neck was always dissected. A part of the mandible was removed only when proximity to the primary growth necessitated this. The technique of block dissection and details of the after-treatment of these cases were then discussed.

Cancer of the Oesophagus

Mr. RONALD W. RAVEN (London) then outlined the present position of the treatment of cancer of the oesophagus. This remained one of the most serious forms of malignant disease, causing great suffering and carrying a high death rate with all methods of treatment. In a series of 277 patients, he had found the middle third of the oesophagus to be the commonest site. Some of the early symptoms were vague and consequently delay in diagnosis was common. The cases most suited for radical surgery had a short history, minimal weight loss, partial dysphagia, and good general health: while a short stricture as seen on *x*-ray examination was also a favourable sign. For lesions of the thoracic oesophagus preliminary mobilization of the stomach followed by right thoracotomy and partial oesophago-gastrectomy was favoured. With tumours of the cervical oesophagus two methods were used. If the gullet could be divided at the thoracic inlet below the growth, a two-stage laryngo-oesophageo-pharyngectomy was performed. If the tumour was below the thoracic inlet and the gullet could be divided above it a high oesophago-gastric anastomosis was done from the right side. For tumours in the lower third, a left transpleural transdiaphragmatic operation was preferred. Palliative treatment with surgery and *x* rays was discussed, and the good response of some cases to *x*-ray therapy was emphasized. The present position clearly provided no cause for complacency and was a challenge to greater effort.

Pharyngeal Reconstruction

Mr. D. N. MATTHEWS (London) spoke on pharyngeal reconstruction after excision for cancer. In reviewing the operations performed, he explained that laryngectomy and partial laryngectomy through a laryngo-fissure demanded some form of reconstruction at the time of primary operation, whereas pharyngo-laryngectomy and lateral pharyngectomy with the creation of a pharyngostome called for re-establishment of the pharynx at a later date. Laryngectomy demanded closure of the pharyngeal aperture of the larynx by scrupulous technique and called for careful consideration

of the necessary skin incision. Laryngo-fissure, with removal of the epithelium, was best completed by application of a free graft. The pharyngostome of lateral pharyngectomy necessitated careful planning of skin flaps before the primary excision. Closure was later effected by a lining flap of cervical skin and a thoraco-acromial tubed pedicle covering. A similar technique was required in laryngo-pharyngectomy, but the risk of stricture formation at the oesophageal opening necessitated appropriate technical manœuvres to avoid this. Routine pre-operative gastrostomy was essential in all these cases except laryngeal free grafts, and the post-operative use of a Ryle's tube was desirable to control downward passage of mucus. Reconstructive operations should not be done for at least three months after the primary excision. The subsequent growth of hair on the lining flap in hirsute males was unavoidable.

Results of Treating Breast Cancer

Mr. R. S. MURLEY (London) discussed the evaluation of results in breast cancer. He referred to the meagre and misleading information about the course of untreated disease, with consequent difficulty in measuring the value of different treatments. Good results were commonly the result of good selection, although this was often unrecognized by the clinician. The fullest possible information should be provided about all those factors which might influence the selection of cases. Particular emphasis was laid on the need for overall survival figures, for information on age distribution, and for the use of a reasonably simple, carefully applied, and internationally agreed system of clinical staging. These points were illustrated by reference to a series studied at St. Bartholomew's Hospital with I. G. Williams and M. P. Curwen. Some of the problems of clinical staging were referred to and the effects of observer error and variations in strictness of staging were described. Despite all these difficulties, clinical staging bore a closer relationship to survival than any other single factor.

Turning to the results of treatment, the speaker pointed out that, on purely quantitative terms, there was little to choose between the results of various operations in strictly localized disease. It was tempting to conclude that all methods of treatment were equally effective in prolonging life in the majority of cases. This being so, it became all the more important to consider the qualitative aspects of treatment, such as the mutilation and morbidity of extensive operations compared with simpler procedures. In conclusion, Mr. Murley said that if all published series satisfied the criteria already outlined the profession would be in a much better position to assess the value of the weapons they use. More critical evaluation of results would lead more and more surgeons to practise less radical operations in the majority of cases. However, until that happy day when the chemotherapy of cancer was a practicable proposition, surgeons much pay careful attention to both the quantitative and qualitative aspects of treatment.

Adrenalectomy for Advanced Breast Cancer

Mr. MICHAEL HARMER (London) spoke on the results of adrenalectomy in the management of advanced breast cancer. In reviewing the history of this type of treatment he referred to Beatson's early work on oophorectomy. Initial good results had led to a wave of enthusiasm, a harvest of ovaries, and subsequent disillusionment. Experimental work based upon Beatson's operation had proved only that mice were more reasonable than men, or rather women. In considering adrenalectomy, the difficulty was to decide which tumours were hormone-dependent, and therefore which patients would respond. The chief indications for adrenalectomy were severe pain, diffuse bone secondaries, and, in certain cases, widespread skin lesions and an uncontrolled primary tumour. Vaginal smears could help in assessing oestrogenic function. Mr. Harmer went on to describe certain details of the technique of adrenalectomy and then showed a film which had been prepared by Mr. Greening and which gave a concise and very clear outline of the management of these cases and the technique of operation.

In discussing this paper Dr. N. C. DELARUE (Toronto) said that in 65 cases he had seen a dramatic improvement in about 40%, the best results being in those with a long history, those who had responded well to previous treatment, and those with widespread disease in bone or skin.

Cardiovascular Surgery

After a brief interlude there followed a symposium on cardiovascular surgery. With a vice-president, Dr. R. M. JANES (Toronto), in the chair, Mr. T. HOLMES SELLORS (London) reviewed the present position of intracardiac surgery, but remarked that in this ever-changing field only the medical student seemed to have a clear idea about the place of various operative procedures. He spoke briefly of the fundamental problems of this type of surgery, including the control of bleeding and suture of heart and great vessels. The operation for relief of mitral stenosis was now a well-established procedure which gave good results with a low mortality. On the other hand, the results of operation for relief of aortic stenosis were not consistently good and carried a greater risk. Mr. Sellors went on to discuss open operations on the "dry heart" and referred to hypothermia and cross-circulation techniques. He explained the closure of interatrial septal defects and illustrated his methods with a large series of slides.

Dr. EDOUARD D. GAGNON (Montreal) spoke about the simultaneous surgical relief of stenotic lesions affecting two valves. In combined lesions of the mitral and aortic valves the physician was apt to ask the surgeon to relieve the mitral lesion "but not too much." However, this could prove difficult with a partly calcified valve. In the first three of his cases the stenosed mitral valve had been relieved first, with no trouble, presumably because a significant amount of mitral regurgitation had been present in all of them. Later the risks of the method had been appreciated in purely or predominantly stenotic lesions, when sudden ventricular dilatation and heart failure might occur after mitral commissurectomy. For this reason he now relieved the aortic valve first, and illustrated the steps of this procedure, which he had used in five cases. There had been one death due to a technical error. He concluded by referring to the rare cases of tricuspid stenosis needing relief.

Obliterative Arterial Disease

From this stage the chair was taken by a vice-president, Dr. W. J. P. MACMILLAN (Charlottetown). Professor A. M. BOYD (Manchester) described his experiences with vasodilator drugs in obliterative arterial disease. After reviewing the different types of arterial occlusion in the vessels of the lower limbs, he mentioned the tendency for vasodilator drugs to be used indiscriminately in those cases where no possibility of relief could be expected. It was therefore important to gain as clear an idea as possible of the underlying pathology, and the speaker outlined the pathology and clinical findings in diffuse obliterative arteritis, secondary popliteal thrombosis, secondary femoral thrombosis, and distal senile obliterative arteritis. Treatment with vasodilator drugs might be expected to be successful when a minor improvement in the blood supply could be of advantage, such as after a main vessel thrombosis and in distal senile obliterative arteritis. Relief of intermittent claudication could not be expected, excepting in some very mild cases. These drugs could not possibly effect a great improvement in those cases where amputation was indicated.

Mr. R. E. HORTON (Bristol) discussed the results of 29 operations for arterial grafting in segmental obstruction due to atherosclerosis. The main indications at first had been: (1) bad claudication pain, unrelieved by other measures and preventing the patient from working; (2) rest pain, sometimes associated with minor degrees of tissue necrosis; and (3) some cases of massive gangrene. Operation had, however, now been given up in this last type of case. The vessel replacement had been effected with a vein in two cases, homologous aortic graft in two, and homologous arterial grafts in 25. The homologous grafts had been quick-frozen and stored at −79° C. The difference

in the results had been striking. Whereas there had been no instance of immediate thrombosis in an iliac vessel graft, and only one case of delayed thrombosis some 18 months later, some 50% of grafts to the distal part of the femoral and popliteal arteries had thrombosed immediately. All these cases had been done by end-to-end anastomosis, and it might be that end-to-side suture would show better results. In this series there had been three deaths, two from coronary thrombosis and one from haemorrhage following aortic graft in a patient who was heparinized. Mr. Horton said that, although the high rate of initial thrombosis might be explained by technical inexperience and by unsuitable selection of cases, an immediate thrombosis rate of some 30% could be expected in the grafting of femoral and popliteal arteries. And to this must be added further failures due to later thrombosis in about another 30%.

Hypothermia

Dr. W. G. BIGELOW (Toronto) spoke on the use of hypothermia when operating on patients who were a bad risk. He defined this state as a body temperature below 31° C. Oxygen consumption was progressively reduced to a half of normal at 28° C., but rarely was it safe to go below this temperature. Hypothermia certainly protected patients from the ill-effects of hypoxia. Three separate teams in Toronto had now dealt with more than 100 cases by hypothermic technique. In general a temperature of 30° C. had been used, at which level oxygen requirements were 55% of normal and the blood pressure was well maintained. The method had been applied in surgery of the aorta, brain surgery, and intracardiac operations. He outlined the various congenital heart lesions in which hypothermia might facilitate the operation, and pointed out the time limits at various temperatures. In acquired heart disease the method might occasionally be of value, as was shown by a patient in whom a large myxoma of the atrium had been successfully removed.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

450th ANNIVERSARY CELEBRATIONS

[FROM A SPECIAL CORRESPONDENT]

The Royal College of Surgeons of Edinburgh celebrated the 450th anniversary of its foundation on June 20 and 21, as briefly noted in our last issue (June 25, p. 1542). The occasion was made memorable by a visit from the Duke of Edinburgh, who had earlier in the year been graciously pleased to become Patron of the College.

The first "Seal of Cause" of the incorporation of Surgeons and Barbers of Edinburgh was granted by the Town Council of Edinburgh, but this was shortly after ratified by James IV of Scotland, the enlightened Renaissance monarch who perished along with the flower of Scottish chivalry on the field of Flodden in 1513. A beautiful copy of the famous portrait of the King, painted by Mytens, the Court painter of Charles I, and now in the possession of the Stirlings of Keir, was on view for the first time during the celebrations. It was a gift to the College, to mark the anniversary, by Sir Henry Wade; and there was great sorrow that Sir Henry—himself associated in one capacity or another with the College for 50 years—should have died within a few weeks of an occasion to which he had looked forward so much.

Honorary Fellowship for Duke of Edinburgh

On the first of the two-day meetings there were operating sessions and clinical and pathological demonstrations in the various Edinburgh hospitals, in the Department of Surgery of the University of Edinburgh, and in the Museum of the College, followed, in the evening, by a banquet at which His Royal Highness the Duke of Edinburgh was admitted to the Honorary Fellowship. The President, Professor WALTER MERCER, spoke of the earlier association of the College with the reigning house, before calling on Emeritus Professor R. C. Alexander, one of the vice-presidents, to present the Duke.

Professor ALEXANDER said the acceptance by His Royal Highness of the Honorary Fellowship forged for him yet another link with Scotland and Edinburgh. The College was a proud and ancient Corporation, but never in its 450 years of existence had it added to its Roll of Honour one more worthy than the Duke, who had established himself firmly in the affections of them all. To his arduous duties of State he had brought an inquiring and a discriminating mind, a keen interest in scientific progress, and a concern for the welfare of his Queen's subjects.

After subscribing to the Declaration of Allegiance, the Duke was presented with the Diploma of Fellowship, and robed in the College gown of dark blue with light blue facings.

Anniversary Banquet

The banquet followed immediately after, and at its conclusion the DUKE, in a witty and charming speech, proposed the toast of "The Craft of Surgery." He was pleased and honoured to become a Fellow of the Royal College of Surgeons of Edinburgh on this great occasion, and, as Patron, he offered himself a very hearty welcome. In the same breath he ought to give an undertaking not to attempt to practise the craft. He understood that James IV of the Scots sometimes used to "have a go" at members of his Household. His were quite safe. He valued their assistance and their friendship too highly to take this sort of liberty with them. He continued:

"In these days when everything is either raised or reduced to a science, which really means that the human element is removed as much as possible, it is refreshing to find the word 'craft' applied to something so august as surgery. But it is certainly the right word, for the surgeon is the craftsman who draws together the laboratory work of the chemist and the physicist, the nutritional expert and the bacteriologist, the biochemist and the psychologist, and, through the skill of his hands, is the person ultimately responsible for the multiplying of human enjoyments and the mitigation of human suffering. I only hope that those people who, quite rightly, believe that surgery is more than a craft will forgive me, but I look at it, still, from the point of view of the patient. If anyone is going to tinker about with my insides I would rather he were an accomplished craftsman than an experimental scientist."

The President, Professor MERCER, in reply, expressed the College's happiness that their Patron was now a fully fledged surgeon. He thanked the Duke not only on behalf of those assembled but on behalf of all the Fellows at home and abroad, in every country of the Commonwealth, for his kind remarks about the craft of surgery and about the College. On such a historic occasion it was proper to cast their thoughts back, and recall with pride those giants of the past who were of their company—the Monros, Charles Bell, Syme, Annandale, Stiles, Wilkie, Fraser, and—*facile princeps*—the immortal Lister, the benefactor of all mankind. On the call of the President, the Duke's health was pledged enthusiastically; and thereafter he was presented with a replica in silver of a surgeon's "bleeding" cup, as a memento of his first visit as Patron.

The toast of the guests was proposed by Mr. JOHN BRUCE, vice-president. They included many distinguished members of the profession, including the Presidents of other Royal Corporations, as well as those who were to be admitted to the Honorary Fellowship on the morrow. The Lord High Chancellor, the Right Honourable the VISCOUNT KILMUIR, replied.

Other Ceremonies

On the following day the President, Council, and Fellows, with their guests and members of the public, attended a special Service of Thanksgiving in St. Giles' Cathedral. The address was delivered by the College Chaplain, the Very Reverend Dr. CHARLES WARR, Dean of the Thistle and Chapel Royal. After the service a luncheon was held in the Upper Library of the University with the President in the chair. Representatives of numerous professional and other bodies

were the guests of the Fellows. The toast of "The Royal College of Surgeons of Edinburgh" was proposed by Sir HARRY PLATT, President of the Royal College of Surgeons of England, and responded to by Emeritus Professor R. W. JOHNSTONE, a past president who had been present at the quater-centenary celebrations. The health of the guests was toasted by the president, and acknowledged in an amusing way by Principal Sir EDWARD APPLETON.

After lunch Honorary Fellowship was conferred on the Right Honourable the Viscount Kilmuir, His Grace the Duke of Hamilton and Brandon, the Right Honourable the Earl of Rosebery, the Right Honourable W. S. Morrison, Speaker of the House of Commons, Principal Sir Edward Appleton, the Very Reverend Charles L. Warr, and Dr. W. E. Gallie.

Dr. GALLIE replied on behalf of the Honorary Fellows, and thereafter addresses of congratulation were read on behalf of the University by Sir EDWARD APPLETON, the Royal College of Physicians of Edinburgh by Sir STANLEY DAVIDSON, the Royal Faculty of Physicians and Surgeons of Glasgow by Dr. A. L. GOODALL, the British Orthopaedic Association by Professor BRYAN MCFARLAND, and the Executive Committee of the *Journal of Bone and Joint Surgery* (of which the President is chairman) by Sir REGINALD WATSON-JONES.

A reception at the College in the evening, attended by some 400 Fellows and guests, concluded a memorable and dignified occasion.

MATERNAL AND CHILD WELFARE

MINISTER OF HEALTH AT NATIONAL CONFERENCE

The forty-second conference of the National Association for Maternal and Child Welfare was held at Church House, Westminster, from June 22 to 24, when 500 delegates of local authorities and social organizations from all parts of the United Kingdom assembled. Sir ALLEN DALEY, who presided over the opening session, said that at the time of the first conference, in 1906, which was presided over by Mr. John Burns, then President of the Local Government Board, the infant and the maternal mortality were both five times greater than to-day.

The MINISTER OF HEALTH (Rt. Hon. Iain Macleod), addressing the conference for the fourth year in succession, said that last year established a record for the low figures for diphtheria. For the first time in the history of this country the number of deaths was represented by a single digit (9), and the number of notifications was 182. He had recently drawn the attention of local authorities to the neglect of vaccination against smallpox. Only 30% of children under the age of 1 year were vaccinated.

Speaking of the possibility of vaccination against poliomyelitis, Mr. Macleod said that high hopes were raised by the announcement of the results of Dr. Salk's studies, but such hopes seemed to have been dashed when the sad news came from America about the results of some of the first trials. He thought it would be a terrible thing if they plunged into this particular subject before they were absolutely certain that the standards of safety were satisfactory and rigorous. That was why the Medical Research Council had recently sent a representative to America. He had now returned and reported, and in the light of his report they were studying what plans they could make to see that the vaccine they used was as safe as human ingenuity could make it. The present situation with regard to the Salk vaccine was perhaps summed up in a phrase used in a very different connexion: "This is not the end, not even the beginning of the end, but perhaps it is the end of the beginning."

During the year, the Minister continued, he had tried to bring home to local authorities his concern at the bad effects on health, especially mental health, of children which followed the break-up of family life. It must be recognized that a team of people were involved in staving off these effects, and there could not be a thoroughly efficient service unless all parts of it worked well and happily together. Another inquiry which he had initiated was into the training and field of work of social workers in the health and welfare services of local authorities. This would be complementary to the Working Party on health visitors.

Finally he referred to the causes of serious illness and death in infancy. Prematurity, although it had been reduced as a cause of death, still headed the list, and bronchitis and pneumonia and then malformation followed. A further attack on these causes of illness and disablement must be made.

Follow-through Surveys

The subject of the first discussion at the conference was follow-through surveys. Dr. J. W. B. DOUGLAS, of the Department of Public Health and Social Medicine, University of Edinburgh, described a nation-wide follow-through survey relating to a sample of children, all of whom had been born during the first week of March, 1946. The survey started with 5,400 children, and after nine years they still had 90% of children who were surviving and were in this country. These children were seen at intervals, first by health visitors, and, as they grew older, by school doctors and nurses, and school teachers returned reports to the survey.

The survey had three main objects in view: to assess the use and availability of the customary services, to test certain theories of child growth and development, and to find out what happened to certain special groups, most particularly from the medical point of view, the children who had been born prematurely. At the beginning of the survey about 800 premature children were enrolled, and all of these were matched with children born at full term. During the first two years the premature children were found to be rather more subject to common infections than the controls, but after the second year there was no reason to believe that premature children were any more likely to fall ill than other children. So far as growth was concerned, on the whole the premature children did tend to catch up, especially the very small ones. The children who remained small were in the main children of parents who themselves were small. A sufficient period had now elapsed to apply tests concerning achievement and intelligence. The proportion of educationally subnormal children among the premature was perhaps a little larger than one would expect, but it was balanced by the fact that many of them were subnormal not because they were premature but because their prematurity was linked up with some developmental defect. On the whole the results concerning prematurity were cheering and encouraging.

Dr. F. J. W. MILLER, of the Department of Child Health, Newcastle-upon-Tyne, gave a description of a follow-through survey of 1,000 families in Newcastle from the point of view of common infective illnesses in early childhood. Such a study had not only provided new knowledge but gave relevance to hospital teaching and a sense of proportion to their thinking upon the current problems of child health. The family doctor had got to think of illness, especially child illness, as a family thing and not an individual thing.

Dr. COLIN HINDLEY, of the University of London Institute of Education and Child Health, gave an account of a study of 200 children seen at regular intervals from birth to maturity, especially with a view to their mental development. Experiments on animals left no room for doubt that early experiences, such as too early separation from the mother, could affect later development. In what ways and to what extent this applied to humans was known to a limited degree, but only in certain directions and often at an impressionistic level. The facts being accumulated in this survey, which included fairly detailed histories of the child himself and the experience he underwent, would throw further light on these problems.

The other discussions during the Conference were on the preservation of the mental health of children, the care and education of the expectant mother, and the problems of deafness and other handicaps in infants and schoolchildren.

Correspondence

Because of the present high cost of producing the Journal, and the great pressure on our space, correspondents are asked to keep their letters short.

Environmental Cancer Research

SIR,—The letter by Dr. Ernest L. Wynder (*Journal*, June 4, p. 1388) deals with some interesting problems, but gives far too much credit to me for contributions to these studies. When his letter appeared I was just starting for Copenhagen, to see the work of the Danish Cancer Registry, hence the delay in offering any further contribution to this discussion.

(1) The association of circumcision with a low incidence of cancer of the cervix, in both Jews and non-Jews, which appears to have been established statistically, offers an attractive opportunity for investigation. The very low incidence of cancer of the penis which is accompanied in this and some other countries by a much greater number of cases of cancer of the cervix is difficult to reconcile with what one might call the "mouse-painting" theory of the action of smegma, as I suggested in my first letter. But Dr. Rachel Stein-Werblowsky, of the Marie Curie Hospital, has pointed out to me that these two organs differ in an important respect; the epithelium of the glans penis is always of the adult keratinized type, while that of the lower female genital tract undergoes a monthly denudation which exposes the basal undifferentiated cells for a time to external factors.

The Scandinavian peoples should be able to throw light on this question, for two reasons: (*a*) circumcision in non-Jewish persons is very rare among them, and is performed only for some urgent clinical reason, and (*b*) the system of cancer registration operating in Denmark, Norway, and Finland, and, in effect, in Iceland, shows the true incidence of these diseases, which cannot be learned from death certificates.

(2) Dr. Wynder refers to the decline in the strict obedience to the Talmudic law which is to be expected in modern life, and to the increase in cancer of the cervix in Jewish women which should ensue if this factor has any protective action. Here one encounters the recurrent difficulty that we do not know the incubation periods of cancer in man; the same problem arises when one looks for any effect of a change in smoking habits upon the prevalence of lung cancer.

The letter from Dr. B. Sandler (*Journal*, May 28, p. 1139) allows one to form some idea of the status of Niddah in England at the present time. One is glad to know that Dr. A. Hochman, of the Mayer de Rothschild Hadassah University Hospital in Jerusalem, is investigating this question among cases of cancer of the cervix, of which he sees about 30 in the course of a year.

(3) Dr. Wynder refers to his results, which he is about to publish, which show that "smoking affects both lung and larynx cancer. . . ."

In England and Wales the number of deaths from cancer of the larynx in both sexes remained at approximately the same level from 1933 to 1949 and is now falling, whereas cancer of the lung in males continues to rise steeply at a rate which has been fairly constant for the last 10 years[1]; if any part of this rise is due to tobacco one notes that this factor has not had any such effect upon cancer of the larynx. So far as I know, no inquiry upon smoking habits in individual cases of cancer of the larynx comparable in any way to that of Doll and Bradford Hill in regard to cancer of the lung has been made in this country. The value of death certificates as an index of the incidence of various forms of cancer is affected by the success of surgery, and this factor differs considerably in relation to cancer of the larynx and cancer of the lung. Hence a morbidity census, such as is available in Denmark, Norway, and Finland, is very desirable in this country.—I am, etc.,

London, E.C.1. E. L. KENNAWAY.

REFERENCE

1 Curwen, M. P., Kennaway, E. L., and Kennaway, N. M., *British Journal of Cancer*, 1954, **8**, 181.

Glioma of the Brain

SIR,—Mr. G. F. Rowbotham and his colleagues (*Journal*, June 18, p. 1445) have wisely drawn much-needed attention to the unhappy plight of patients afflicted with cerebral gliomata. In every series so far published the long-term results of any form of treatment have been disappointing, and yet every neurosurgeon remembers a few cases in his own series where unexpectedly good results have occurred. Personally, I disagree with the authors that "operability must be determined by the appearance of the brain through the dura mater or by probing," and that unsightly bulges will result if the dura is opened. I have never had any difficulty when a large craniotomy was performed, together with a full subtemporal craniectomy. Also, I consider that only a large exposure gives any adequate evidence of the relations of the tumour. Tapping the lateral ventricles is of course necessary immediately before the dura is reflected.

Similarly, I cannot agree that "a surgeon is justified in refraining from operating" if the diagnosis of malignant glioma is established. Space does not permit a full discussion on this matter, but suffice it to say that several details of surgical technique require revision. The comment, "Though surgery has little to offer in the cure of cerebral gliomata," is somewhat premature.—I am, etc.,

Shortlands, Kent. W. J. ATKINSON.

A New Treatment of Barbiturate Intoxication

SIR,—I read with interest the article from Melbourne by Dr. A. Shulman *et al.* (*Journal*, May 21, p. 1238) on the new approach to the treatment of barbiturate poisoning. The results obtained in their series of 41 cases leave little doubt that this method compares favourably with the alternatives so far available to us. I would like to quote an illustrative case which has just been treated in this hospital by the method advocated by these authors.

A 23-year-old girl was seen in the casualty department at 4.15 p.m. on May 15, in deep coma, having ingested approximately 72 gr. (4.7 g.) of cyclobarbitone some fourteen hours previously. On examination she was cold and cyanosed, pulse 60, respirations 8, B.P. 60/?. Atonia and areflexia were present. The pupils were widely dilated and unreactive, and there was no response to supra-orbital pressure. The chest appeared clear. A laryngoscope was passed, the pharyngeal reflexes found absent and the laryngeal reflexes almost absent. A cuffed endotracheal tube was inserted and the stomach contents aspirated. Oxygen was administered. An intravenous infusion of normal saline was set up, and the first of two treatments with β-ethyl-β-methylglutarimide (N.P.13) commenced. 2:4-diamino-5-phenylthiazole hydrobromide (D.A.P.T.) was not available for the first of these treatments. Within three hours a total of 200 ml. N.P.13 solution (1.0 g. N.P.13) was given in 10-ml. doses into the rubber tubing of the drip at intervals of five minutes. Lacrimation and reactive pupils were observed after an hour, and at the end of the treatment the deep reflexes had all returned and respiration was almost normal. The patient was transferred to the ward and a penicillin "cover" commenced. Twenty-four hours later there was still no response to supra-orbital pressure, though pulse, respiration, and blood pressure were satisfactory. A supply of D.A.P.T. had become available meanwhile, and so it was decided to give a second course of N.P.13, this time combined with D.A.P.T. Over a one-and-a-half-hour period the patient received 180 ml. N.P.13 solution (0.9 g. N.P.13) and 18 ml. (0.27 g.) D.A.P.T., the latter in doses of 1 ml. immediately prior to the former. At this stage signs of toxicity developed (retching) and the treatment was stopped. Within five hours voluntary movements were seen and consciousness was regained some seventy-two hours after admission. An uneventful recovery followed.

This patient was moribund when first seen, and my impression was that with conventional treatment alone she would not have recovered. I feel, therefore, that this new treatment merits a trial in this country, where, unhappily, other such cases are only too common. My thanks are due to Dr. A. M. Nussey for permission to report this case, and to Dr. A. E. Alcock, of Nicholas Products Laboratories Ltd., Slough, who kindly made available supplies of N.P.13 ("megimide") and D.A.P.T. ("daptazole") for clinical trial.—I am, etc.,

Solihull. J. W. S. WEBB.

An Antibiotic-induced Staphylococcal Enterocolitis

SIR,—I read with great interest Mr. B. J. Fowler's article, "Post-operative Staphylococcal Enterocolitis during Antibiotic Therapy" (*Journal*, May 28, p. 1313). I would like to report a further example of this condition.

On May 16 a woman aged 37 was admitted with a perforated gastric ulcer, which was closed surgically. As the operative findings indicated that the perforation was somewhere over 24 hours, terramycin 250 mg. six-hourly was given prophylactically; the first 500 mg. were given intravenously. By the end of the second post-operative day all signs of paralytic ileus had disappeared, but because of a slight evening temperature (100° F. (37.8° C.)) the terramycin was continued. On the third post-operative day the bowels opened normally, but the stool was rather loose. On the fourth day the bowels acted 8 times in 24 hours. The fluid stool was yellowish, and contained flecks of mucus. There was no nausea or vomiting, and the only abnormal finding was a slightly tender mass in the pelvis, insufficient to cause the symptoms. The terramycin was blamed and, despite a rising temperature, now 101° F. (38.3° C.), was discontinued.

On the fifth day the patient collapsed with, apparently, a complete circulatory failure. Over the past 12 hours she had vomited four times, and had had 20 very fluid motions. There were no signs of cardiac disease or pulmonary complications. The abdomen was soft, not distended, slightly tender on the right side, and with loud and almost continuous bowel sounds. The small, tender pelvic mass had not increased in size. In consultation with Dr. W. Brinton, peripheral circulatory failure was diagnosed, believed to be due to pus in the pelvis. Blood investigations showed Hb 100%, P.C.V. 49, W.B.C. 9,400; the differential count was within normal limits. The serum sodium was 148, serum potassium 5.3, and serum chloride 91 mEq/litre, and the blood urea 70 mg./100 ml. Further surgery was considered unjustifiable and unwarranted. A Ryle's tube was replaced, and the stomach aspirated regularly. Fluid was replaced by intravenous drip, and oral intake limited to 1,000 ml. a day, as larger quantities seemed to increase the diarrhoea and cause nausea. 15 mg. of methylamphetamine hydrochloride was placed in each of the first two bottles of the drip; 50 mg. of cortisone was given intramuscularly, and continued at 25 mg. six-hourly. Because of this and the fact that the condition was thought to be primarily due to sepsis, terramycin 250 mg. six-hourly was recommenced. On the sixth post-operative day the clinical picture was similar, but the profuse bowel actions were now, like the stomach aspiration, blood-stained. The urinary output for the past 24 hours was 1,260 ml. against an intake of 5,000 ml. Treatment was unaltered, except for the quantity and type of intravenous fluid given.

Until the eleventh post-operative day the condition remained unaltered. The bowel actions at times were almost continuous. The fluid stool that had shown a heavy melaena was now a dark green colour. The urinary output had dropped to between 300 ml. and 900 ml. a day, and maintaining fluid and electrolyte balance was a problem. In five days she had had 51 pints (29 litres) of fluid intravenously, consisting of normal saline, potassium chloride, glucose saline, "dextraven," molar lactate, plasma, and blood. The Ryle's tube had been removed because of a sore throat, and the nausea and vomiting had ceased. The blood pressure was maintained at 110/70, but on the ninth post-operative day the blood electrolytes began to show abnormal changes. The blood urea rose to 350 mg./100 ml., the serum sodium fell to 123, the serum potassium to 4.4, the serum chloride to 81, and the serum bicarbonate to 21 mEq/litre. The clinical picture remained almost identical to that of the fifth post-operative day, except that there was no dehydration. As the physical signs did not suggest a further intraperitoneal catastrophe, or that the diarrhoea was entirely secondary to a pelvic abscess, the original treatment was continued, substituting penicillin for terramycin. "Pamine" bromide (methscopolamine bromide) was given to diminish bowel actions, as standard procedures had failed to produce any result. In the next 48 hours the diarrhoea lessened to five fluid stools in 24 hours. Cultures from the throat, rectum, and faeces had grown a profuse growth of coagulase-positive staphylococcus resistant to penicillin, streptomycin, and terramycin, but sensitive to chloramphenicol. The latter was therefore given orally, 500 mg. six-hourly, with unlimited fluids and a regulated diet by mouth. The intravenous drip was discontinued. During the 14th and 15th post-operative days remarkable progress was made, and by the 16th day there was no incontinence and the bowel actions, four a day, were more solid. Urinary output had risen to 1,600 ml. against an oral intake of 2,800 ml. The blood urea had fallen to 36 mg.%, and the serum potassium to 3 mEq/litre, while the serum sodium had risen to 135, the serum chloride to 86, and the serum bicarbonate to 38 mEq/litre.

The patient continued to make steady progress; on the 25th post-operative day a further throat culture was sterile, but a rectal culture remained positive to *Staphylococcus aureus*, mildly resistant to chloramphenicol. The chloramphenicol was discontinued. Her bowels were completely controlled to one or two normal actions a day. She is now out of bed, enjoying a full gastric diet, with the wound securely healed, and the small pelvic mass has disappeared. I think that the successful outcome was due to massive venous fluid replacement, at the same time maintaining electrolyte balance. Cortisone enabled the patient to deal more adequately with the infection and to overcome the peripheral circulatory failure. Pamine may have helped in reducing the number of bowel actions. And the chloramphenicol controlled the fulminating organisms once the diagnosis had been made.

I thank Mr. Troup, under whose care this patient was admitted, for his permission to record these facts, and Dr. Brinton for his very helpful suggestions.—I am, etc.,

Alton, Hants. A. H. HAYSOM.

Ichthyosis and Hypnosis

SIR,—In August, 1952, I reported in your *Journal*[1] the case of a boy of 16 suffering from congenital ichthyosiform erythroderma of Brocq who was treated by hypnosis. The case was of exceptional interest, as no previous record of a congenital structural disease improving existed. That such a condition should improve by psychotherapeutic methods is even more inexplicable, and, to quote from a letter in your *Journal* by Dr. F. Ray Bettley,[2] "demands a revision of current concepts of the relation between mind and body." It will be recalled that the patient improved limb by limb in direct response to hypnotic suggestion, thus ruling out the possibility of spontaneous resolution.

It is now four years since this patient was first treated, and the present condition of the case is of great interest. If any alteration had occurred either for better or worse, and it were possible to relate this alteration to any environmental or psychological change, it might be possible to shed some light on the obscure aetiology of congenital illness. It was with the express purpose of observing this case further that members of the Dermatological Section of the Royal Society of Medicine asked me to re-present the

FIG. 1.—Before treatment.

FIG. 2.—Four years after treatment.

patient. This was done on January 20, 1955, and I would like to record here the present condition of the patient.

He has of course physically matured greatly, as would be expected, and is now nearly 19 years old. He has also remained in work as an electrician's mate, and lately a bicycle mechanic, without a break since his discharge three years ago. Not only has there been no relapse, but his skin has continued to improve. What is also surprising is that this improvement should continue without further treatment of any sort, hypnotic or otherwise. The patient is in no doubt as to his improvement, and comparison of photographs confirms this. There is still considerable involvement of feet and some involvement of legs and thighs, but all much less severe. The arms and hands are quite clear, and abdomen, buttocks, and back are only slightly involved. Nowhere is there evidence of cracking and infection, which had been such a disabling and painful complication previously. The smell has also quite gone.

I attempted to hypnotize the patient again, and it is curious to relate that, while on discharge he had been a good hypnotic subject, he was now quite unhypnotizable. I tried again two weeks later and this time succeeded, but further suggestions made in the hypnotic state that his legs would improve did not prove efficacious.

One other fact I feel should be brought to notice is the case of pachyonychia congenita treated by Mullins *et al.*[3] by hypnosis. This is a congenital condition closely allied to Brocq's ichthyosis and with a very similar pathology. That this also responds favourably to hypnotic suggestion shows that the treatment is repeatable in other hands and that the improvement in the case I reported is not a freak occurrence.—I am, etc.,

A. A. MASON.

London, W.1.

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1 Mason, A. A., *British Medical Journal*, 1952, **2**, 422.
2 Bettley, F. R., ibid., 1952, **2**, 996.
3 Mullins, J. F., *et al.*, *Arch. Derm. Syph. (Chicago)*, 1955, **71**, 265.

Book Reviews

SIR,—As part editor of two medical journals, I have always held the opinion that book reviews should be unsigned. I can think of no more convincing support of this opinion than the letter from Dr. Iago Galdston (*Journal*, June 11, p. 1430).

Professor McKeown (*Journal*, March 19, p. 710) was asked his opinion of a book dealing with a subject on which he is an authority. He read it. He did not think much of it. He said so—humorously, a little unkindly, but certainly not maliciously. Any author should expect some reviews of this sort and be prepared to take them. Any reviewer is entitled to write them, and should not, as the result, be subjected to outraged abuse.

It would have been more in accordance with the dignity of the *B.M.J.* had this exhibition of childish tantrums been forwarded without comment to the reviewer, and kept out of the correspondence columns.—I am, etc.,

HENEAGE OGILVIE.

London, N.W.8.

Bell's Palsy Treated With Vitamin B_1

SIR,—Over the last two years we have had three cases of Bell's palsy; they have all been treated with vitamin B_1 injections plus B_1 tablets, and the following results were obtained.

Case 1.—A woman, aged 28, attended the surgery complaining of watering of the right eye and inability to lower the lid, and also dribbling from the mouth. These symptoms had come on suddenly about 36 hours previously. On examination she had a complete, typical, right-sided Bell's palsy. She was injected with 50 mg. vitamin B_1 intramuscularly and given 50 mg. vitamin B_1 tablets three times a day for six days. When she attended daily for her injections the following improvements were noted: first day—able to close her eyelid slightly; second day—no epiphora; third day—could half-close eye, no dribbling from mouth; fourth day—mouth almost level and could puff out cheeks; fifth day—could easily close eye, mouth level on smiling, partial wrinkling of forehead; sixth day—no abnormal signs or symptoms. The patient was under treatment by a psychiatrist for anxiety neurosis. He had noticed the palsy and had referred her to a neurologist for treatment. That evening the patient attended surgery and the above-mentioned treatment was commenced. The appointment made by the psychiatrist for the patient to see the neurologist was booked for seven days later; she kept this appointment and the neurologist was unable to find any trace of palsy.

Case 2.—A woman, aged 40, came complaining of pain below and behind the right ear, slight drooping of the mouth, and inability to close her eye fully. Bell's palsy was diagnosed and three intramuscular injections of vitamin B_1 50 mg. were given on three successive days, plus B_1 tablets 50 mg. Not only did the symptoms become no worse, but on the fourth day the patient was perfectly well.

Case 3.—A male, aged 50, whose symptoms had existed for a few days was given intramuscular injections of vitamin B_1 50 mg., plus B_1 tablets 50 mg. for six days, but it was about 14 days before recovery was complete.

It is stated[1] that with or without treatment it takes about three or four weeks before voluntary movement is possible in Bell's palsy, and some months before complete recovery. It appears to us that from these quick results following B_1 injections and oral treatment in, admittedly, a few cases the treatment is worthy of a more extensive trial.—We are, etc.,

R. G. WIGODER.
H. G. JEFFS.

London, S.E.6.

REFERENCE

1 Conybeare, J., in *Textbook of Medicine*, 1952, edited by J. Conybeare and W. W. Mann, 10th ed., p. 700. Livingstone, Edinburgh.

Opportunities for Medical Practice

SIR,—May I add a note to the article by Sir Stanley Davidson on opportunities for medical practice (*Journal*, May 14, p. 1171) with regard to the position in West African colonies? Private practice amongst Europeans is very limited in Nigeria owing to the relatively small white population, but all forms of hospital and private practice amongst the African population are at the present time in great need of increased staff.

While it is certainly the ideal that the medical needs of Nigeria should be in the hands of Nigerian doctors, it will still be many years before sufficient graduates from Ibadan University medical school are forthcoming, and the situation is in many areas quite desperate. Nigeria is heavily populated, yet there are large areas, measured in hundreds of miles, where there is no medical care, no hospital—government or mission—and only the poorest of supplies in village dispensaries staffed by overworked and often untrained nurses. There is at least one fully equipped newly built government hospital only 250 miles from Ibadan in an area greatly in need which has never even been opened because there is no doctor available.

While, therefore, the time will come when West Africa will, like the Dominions and some other colonies, become medically self-supporting, that time, as Sir Stanley points out, is still a long way off. Practitioners anxious to do a worth-while job in a growing country will find open arms in the towns and cities of Nigeria if not of the West African colonies as a whole.—I am, etc.,

R. SCHRAM.

Ibadan, Nigeria.

Tonsillectomy

SIR,—While having luncheon to-day at Great Ormond Street after my operating list I read the description of guillotine tonsillectomy and curettage of adenoids by Mr. J. C. Campbell and Dr. D. Hunter Smith (*Journal*, June 18, p. 1451). I had, during the morning, removed large lateral adenoid remnants causing deafness and repeated otitis media in four children. My experience is that if lateral adenoid tissue, around and below the Eustachian cushions, is not completely removed at the adenoid operation it subsequently hypertrophies and often causes more ear troubles than the patient had suffered before the operation. Campbell and Smith state that with a good ethyl chloride anaesthesia the surgeon can have up to two minutes to guillotine the tonsils and curette the adenoids. It takes me more than two minutes of deep anaesthesia to palpate the adenoids and assess their size and disposition, to remove the central mass by one stroke of the curette and the lateral extensions around the Eustachian cushions by a stroke on each side, and then to remove any small pieces that may have escaped these three strokes and are still palpable. This is the most

difficult part of the tonsil and adenoid operation to carry out efficiently and requires painstaking care.

Carrying on, as I do, a 40-years tradition at the Hospital for Sick Children of dissection of tonsils in all cases I cannot be expected to support the guillotine operation, and I need 10 minutes of deep anaesthesia, capable of extension exceptionally, for each tonsil and adenoid operation. I will not enter here into a discussion on operative technique for removal of tonsils, but I am horrified at the frequency of large lateral adenoid remnants causing ear trouble in my patients. More time and care are necessary. Ether anaesthesia following ethyl chloride induction is as safe and pleasant as ethyl chloride alone, and, after all, what is the hurry?—I am, etc.,

London, W.1. JAMES CROOKS.

"Half-minute" Thermometers

SIR,—Dr. D. J. Campbell's suggested time-in-mouth test of two minutes for thermometers (*Journal*, June 18, p. 1474) would damn a lot of perfectly sound instruments. In my experience, a half-minute clinical thermometer will record body temperature in that time, given the chance. This can be shown quite simply by—to put it politely—holding the thermometer bulb in the urinary stream; few men can urinate for half a minute, and yet this method will give an accurate reading, which can be checked by a ten-minute mouth reading.

If a person has a true temperature of 99° F. (37.2° C.) he must keep his mouth shut for up to ten minutes for mouth temperature to equal body temperature. This again can be shown by removing the thermometer at intervals through that time. It is astonishing how it creeps up, reaching a constant reading often after six or seven minutes.

For practical purposes, five-minute mouth readings are accurate within 0.4° F. (0.2° C.). I am sure that low temperature readings are usually not the fault of the thermometer but of its method of use.—I am, etc.,

St. Ives, Cornwall. P. C. MATTHEW.

SIR,—Measurement of oral temperature provides a telling introduction for medical students to the importance of instrumental errors. In practical physiology classes at Cambridge before the war "half-minute" thermometers usually gave reproducible readings after four to five minutes. Dr. D. J. Campbell's suggestions (*Journal*, June 18, p. 1474) of a standard "time-in-mouth" of two minutes would usually involve errors too small to be of clinical significance. They would in any case be masked by non-instrumental errors. Shorter times often yield misleading values.—I am, etc.,

London, W.C.1. F. R. WINTON.

Cyclopropane, Dental Extraction, and Sparks

SIR,—About a year ago you published a letter[1] from one of us (J. G. B.), who had previously advocated the use of cyclopropane as an alternative to nitrous-oxide anaesthesia for dental extraction. The purpose of the letter was to withdraw that advocacy because Dr. H. Newton-Andrews[2] had reported that, while giving nitrous oxide for an extraction, he had seen "a shower of sparks" when the forceps slipped. It was feared that if such sparks occurred when cyclopropane had been administered there might be an explosion, and it was therefore advised that cyclopropane anaesthesia for the extraction of teeth should "be considered dangerous and abandoned" until the matter had been investigated.

The advantages of cyclopropane anaesthesia and its successful trial for dental extraction on more than 2,000 patients prompted us to undertake this investigation, the result of which we have published elsewhere.[3] Since the conclusions we reached largely revoked the warning given in the letter referred to above, perhaps you would allow us to summarize them here:

Experimentally we produced sparks visible in daylight by the application of dental forceps to the crowns of extracted teeth. These sparks were formed only when the enamel, the hardest substance in the body, was fractured by the forceps, and they resembled those produced with flint and steel. With these sparks we ignited in turn cyclopropane, ether, and divinyl ether, mixed with high proportions of oxygen. With decreasing concentrations of oxygen, ignition of cyclopropane became increasingly difficult and failed when the oxygen was as low as 30%. A grindstone applied to dental forceps threw off a stream of sparks far in excess of any that could be obtained with teeth. With these sparks we failed to ignite cyclopropane when the oxygen was less than 28%.

We found that when anaesthesia had been induced with 50% cyclopropane and 50% oxygen by the method described by Bourne,[4] the first few exhalations contained proportions of oxygen that exceeded 28%. We suggest, therefore, as a safeguard, that 50% cyclopropane should be administered not with oxygen but with oxygen and nitrogen mixed in equal parts. Cylinders containing this oxygen-nitrogen mixture for medical use are readily obtainable commercially. The flow-rate of the mixture can be measured with an oxygen rotameter. With this mixture the proportions of oxygen in the exhalations of patients did not increase above 23%; and, clinically, anaesthesia was indistinguishable from that which we obtained when 50% cyclopropane was used with 50% oxygen.—We are, etc.,

J. G. BOURNE.
H. J. V. MORTON.

London, S.W.1.

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1 Bourne, J. G., *British Medical Journal*, 1954, **1**, 937.
2 Newton-Andrews, H., ibid., 1954, **1**, 641.
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4 —— *Proc. roy. Soc. Med.*, 1954, **47**, 416.

Varicella with Neurological Complications

SIR,—As a surgeon with experience of tropical diseases at sea, I am tempted to ask Dr. D. S. Goldfoot (*Journal*, June 11, p. 1430) whether there was a rise of temperature in the case he so accurately describes. At the back of my mind is smallpox in this case of varicella with neurological complications.

Masters of vessels are instructed to regard with grave suspicion a case of "fever with spots" in a vessel not carrying a surgeon. Our *bête noire* at sea is, of course, this disease, and many a good ship has been kept swinging round a buoy in quarantine while a case of varicella is proved to be so and not smallpox.—I am, etc.,

S.S. "Brazil Star." R. E. PALMER-FIELD.

The Changing Face of Medicine

SIR,—The Health Service provides general practitioners and consultants. Where and how does it provide for consultation? The patient is sent to the hospital and the hospital letter comes back. However helpful, this not a consultation. Only if the patient is unable to be transported to the hospital does the domiciliary consultation take place and the consulting doctors actually meet and consult. If, then, consultants can scarcely ever consult, the whole profession, and the public, suffers a loss which is already beginning to make itself felt, if one is to believe the opinions that the standard of medical practice is falling. To try and make clear to the lay administration (whose help will be needed in finding a remedy) what is lost, may I give some examples?

A consulting physician, who prescribed a new and dangerous drug for a patient of mine, resolved my doubts about the wisdom of its use in general practice, and carefully explained its management. How good for the general practice of medicine. A consulting surgeon demonstrated the manipulation to reduce a disk lesion in a patient immovable with pain in his back. He did not get the next two, because I was able to manage them myself. Bad for business, perhaps, but how good for medicine. Neither of these results could have come from a hospital letter. We have heard lately of the bad practices with large lists and no running water. If doctors with such practices exist there is no way of dealing with them by compulsion, but I venture to suggest that they would not be slow to take advantage of easy fees for domiciliary consultation, and that the frequent enter-

tainment of consultants in their patients' homes or even in their own surgeries would soon bring about an improvement in their conditions of practice and well justify the payment of the fees.

If a consultant cannot consult, something is lost to everybody. We must try to find a remedy.—I am, etc.,

Crowthorne, Berks. H. D. FORBES FRASER.

SIR,—I read with interest Dr. G. T. Tate's letter (*Journal*, June 4, p. 1390). I am pleased to see that someone has had the courage to express an honest opinion of his service in the Forces. I served for four years in the Royal Navy as a general duty medical officer, and entirely agree with his views. The fact that the value of this service is dependent on one's own initiative and is not purely medical is not a peculiarity of the Services, but applies to civilian appointments.—I am, etc.

Manchester, 13. G. M. INGALL.

SIR,—May I, another National Service medical officer, make a few comments in reply to Dr. G. T. Tate's letter (*Journal*, June 4, p. 1390)? I would strongly advise any doctor who has yet to commence his National Service to stay out of the Army as long as possible (at least 18 months) in order to obtain grading, and hence, in the event of his being posted to a military hospital, likely to remain *most* of the time in one place, and not be pushed around from pillar to post, as will quite certainly otherwise happen. Let him, moreover, not be so misguided as to "sign on" for three or more years in the hope of furthering his professional career, for Dr. Tate's claim that the R.A.M.C. "provides . . . facilities for postgraduate specialist study which are unrivalled in the civilian medical world . . ." is patently absurd. Even when there are soldiers' families to treat in addition, the amount of clinical material cannot in any way compare with that of an average-sized civilian hospital, whose bustling, stimulating, and friendly atmosphere markedly contrasts with that of its military counterpart, which, with its rank-consciousness, its saluting, and regimental discipline, never escapes the close resemblance to a parade ground.

I have discussed National Service with scores of my colleagues. The vast majority, whilst admitting the unfortunate necessity for National Service in the present political situation, remain, like myself, utterly frustrated by the lack of opportunity to practise our profession and by the unsympathetic and uncooperative attitude of our seniors in the administrative branch of the R.A.M.C.—I am, etc.,

"HOME POSTING."

Measles

SIR,—Dr. G. T. Rutherfoord asks if any useful purpose is achieved by the notification of measles (*Journal*, June 11, p. 1431). In the two districts I serve, with a total population of 80,000, the only use of measles notification is to enable the periodicity and geographical progress of the outbreaks of the disease to be observed. Thus in July, 1954, I was able to remind general practitioners that they would be busy with measles in the first quarter of 1955, and on other occasions I have had Central Council for Health Education posters giving the warning signs of measles stuck on telegraph poles in the rural district a month before the disease arrived from the borough. The value of such uses is small, and in any case enough information for these purposes can be obtained from returns of infectious diseases made by head teachers.

The statutory notification of measles is a waste of time and money. In the week ending May 28, 1955, 25,470 cases were notified in England and Wales, and, as measles is not notifiable from hospitals in which infectious diseases are received, almost all these cases must have been notified from general practice and a fee of 2s. 6d. paid for each. Thus over £3,000 must have been spent in one week's notifications on fees alone. This money could be diverted to better use—for instance, with its help the fees for notification of diseases of epidemiological importance could be doubled or trebled.

The nonsense of measles notification does not end with notification by the general practitioner. It is the duty of the district M.O.H. under the National Health Service Acts to send a copy of each notification to the county M.O.H. within 48 hours of its receipt. This means that at the height of an outbreak the work of the clerical assistants is dislocated each day by the copying out of particulars from 60 notifications.—I am, etc.,

Dartford, Kent. J. H. HUDSON.

SIR,—I feel I must reply to the letters concerning the use of prophylactic sulphonamides or penicillin in measles. From the replies received the question is obviously an open one and we in this practice, too, look forward to an "official" report. I would, however, like to ask a few questions: (1) How long is the child ill following the measles infection? Using the prophylactic treatment, we nearly always have the child back at school within a fortnight of the rash appearing. Is this attained with the expectant symptomatic treatment? (2) How good is the home nursing? If strict bed rest is ordered, constant watchfulness is essential. With mothers having to go out to work to help the family budget (a large proportion in our practice) the nursing is often left to friends or relatives, and strict bed rest is usually observed more in the breach than in the observance. In crowded homes (several families living in close proximity, which makes isolation difficult), isn't there a good indication for prophylaxis? (3) What would most doctors do in the case of their own children with measles, in the light of present knowledge?

The impression appears to have been created in the minds of some correspondents that the practice in which I work is prone to be "antibiotic-happy," so here are a few facts on our outlook on antibiotics: (*a*) We have never recently used systemic chloramphenicol. (*b*) Aureomycin has only been used three or four times in the last six months and then only in cases where there has been no response to sulphonamides or penicillin. (*c*) Penicillin or sulphonamides are used when there is pyrexia, with chest signs and symptoms. (*d*) Penicillin is used for boils only when they are multiple. In other words, we only use the antibiotics when there is a definite indication, either when it is known to be of definite value, or when other forms of medical treatment have not brought any response (apart from the controversial question of measles prophylaxis), and then in adequate dosage and duration. As Dr. R. G. Wigoder, my principal, has often said to me—"Never use a machine gun to kill a fly."—I am, etc.,

London, S.E.6. J. F. LUND.

Mistaken Capsules

SIR,—Dr. R. E. Irvine (*Journal*, June 18, p. 1477) reports two cases of "carbrital" capsules being taken by mistake for chloramphenicol, and suggests that some more obvious distinguishing mark should be applied to the capsules. I venture to suggest that what is required is a uniformity in the appearance of tablets and capsules so that no one would be able to guess the identity of a drug by the size, shape, or colour of tablet. In this way the reported cases of error and many others would be avoided, and any tablet or capsule found outside a properly labelled container would have to be discarded.—I am, etc.,

London, E.C.1. I. M. P. SMEED.

Pro-Forma

SIR,—A letter on gonorrhoea statistics in your issue of June 11 (p. 1430) contains the following statement: "A pro-forma has recently been circulated. . . ." Although the term "pro-forma" is quoted in the letter by medical recipients of the document so described it was introduced, presumably, by the body circulating it. I should have thought that this word (whether written as one word "proforma" or as "pro-forma," or as a combination of

words "pro forma" without the hyphen) meant "as a matter of form," and any dictionaries I have consulted give this or something similar as its meaning. It is, in effect, adverbial and should not be used as a noun. Neither Fowler nor Brewer gives any guidance. The word seems, however, to be used nowadays in some commercial and administrative circles as a substitute for the simple word "form." For instance in this case it appears to have referred to a sort of questionary. I regularly receive invitations to take part in meetings and, in reply, to fill up the "enclosed pro-forma," which asks for answers to certain questions to be entered in what I should call a "form."

In an official memorandum of the Ministry of Health issued in June, 1949, a paragraph is headed "Pro Forma Contracts," and in the body of the paragraph what appear to be the same documents are described indiscriminately (it would seem) as "pro forma contracts" or as "suggested forms of contract." In the former expression "pro forma" is adjectival, which is perhaps not an objectionable use of an adverbial phrase, although "suggested forms of contract" seems to me better English. The Ministry's practice is in accord with a definition contained in Bithell's *Counting House Dictionary* of 1893, to which a university librarian has directed my attention. But when "pro-forma" is used as a substitute for a noun it seems to me clumsy, ugly, and unnecessary.

I mention this matter because, in medicine, we have a sufficiency of awkward language and specialized uses of words, without becoming entangled in commercial and administrative jargon.—I am, etc.,

Cardiff. R. M. F. PICKEN.

Chloramphenicol

SIR,—Dr. A. I. Suchett-Kaye's letter (*Journal*, June 11, p. 1430), containing an excellent review of literature on the subject of chloramphenicol-induced aplastic anaemia, would appear very timely. Many fatalities have occurred since aplastic anaemia due to chloramphenicol was first reported in 1950. Three such cases have been reported in the national Press in the last three months. The following is a case report of yet another fatality.

A chronic bronchitic, aged 77 years, had an acute attack of bronchitis on December 31, 1954. He was treated with chloramphenicol 12 g. given over a period of three weeks. After an initial improvement a relapse occurred for which a further course of 12 g. chloramphenicol was given—making a total of 24 g. given over a period of six weeks. On March 18, 1955—that is, 17 days after the last dose was taken—a relative noticed purplish spots all over his arms and body. Two days later he developed a severe sore throat which got steadily worse, and next day, March 21, he was admitted to hospital.

On admission the temperature was 100.6° F. (38.1° C.); there were numerous purpuric spots all over his body. The pharynx was grossly congested with numerous submucosal petechiae; these were also all over the uvula, tonsillar bed, and palate. Cervical lymph glands were enlarged and tender. At the left base were signs of consolidation. It was thought that the spleen was just palpable and the liver edge was just tipped. Hess's test was positive. Blood investigations showed: Hb, 82%; W.B.C., 1,400 per cubic mm. No polymorphonuclear cells were seen. Lymphocytes, 96%; platelets, less than 20,000 per cubic mm. A diagnosis of drug purpura was made, the cause being chloramphenicol; for this, penicillin, two million units daily, was given. Thirty-six hours after admission the original ear puncture was still bleeding; over this time his condition remained unchanged. The blood picture on March 23 showed a drop in Hb and W.B.C.s to 59% and 800 per cubic mm. respectively. A marrow puncture done the same day showed the cells of the granular series, red cell precursors, and megakaryocytes to be completely absent. The main cells seen were lymphocytes and vacuolated plasma cells. A transfusion of two pints (1.1 l.) of whole blood was given.

Over the next two days his blood picture showed the following: March 24—Hb, 66%; W.B.C., 600 per cubic mm. March 25—Hb, 58%; W.B.C., 350 per cubic mm. On the results of the last examination it was decided to transfuse the patient again, but death occurred on March 26.

Chloramphenicol is a drug of such potency and with such powers of diffusion in the tissues that it presents great attractions to the practising doctor. Its dangers, however, as illustrated yet again by the above, are so great that it should be used only when either the nature of the infecting agent or the severity and location of the infection are such as to justify a definite risk. It is usually agreed that dosage should not exceed 50 mg. per kg. body weight in adults and 100 mg. per kg. body weight in children. Treatment should not exceed ten days, except in typhoid fever. Second courses of treatment are particularly dangerous, even when given at considerable distance of time. As with amidopyrine and other marrow depressants, a first course sensitizes the marrow and the second acts as a precipitant. Therefore, chloramphenicol should not be used in the treatment of chronic infections of the chest and urinary tract, in spite of its attractions.—I am, etc.,

London, N.19. MAUREEN A. TUDOR.

POINTS FROM LETTERS

Night Cramps

Dr. H. J. HOYTE (Birmingham, 33) writes: As a young medical student I was an ardent cyclist and frequently bicycled 100 miles and more in the day; this led to some over-development of the thigh and calf muscles. In my fourth and fifth decades I began to suffer from night cramps which became increasingly severe and painful. In my early 50's I was serving in the R.A.M.C. in the 57th General Hospital, Cyprus. On New Year's Day, 1945, the order went out for all ranks to parade at 6.30 a.m. for P.T., which usually started with a half-mile trot. After the first morning's run I suffered agonies of stiffness, but I kept up the morning P.T. and my cramps left me, never, I hope, to return. I still do "running on the spot" for about a minute each morning. This helps to keep me fit and to banish cramps. My own theory is that muscles once developed require regular stretching and the concomitant flushing of the capillaries. If they fail to get this they take their revenge by cramping up from time to time.

Castration of Sex Offenders

Mr. HAROLD BURROWS (Marlborough) writes: In a leading article (*Journal*, April 9, p. 897) you quote statistics from the Herstedvester psychopathic prison in Denmark where men convicted of a sexual offence on a child may choose between castration and long imprisonment. You mention the following figures: Of 175 released prisoners, 117 had been castrated and 58 had not. Of the former only 5 (4.3%) were again convicted—all of them homosexuals associating with boys. Of those released without castration 25 (42.4%) were convicted of renewed offences. In your concluding remarks you say: "In Britain there are probably few advocates for the castration of sex offenders; and the Danish results, impressive as they are, do not suggest that castration offers such a sound solution of the problem of treating these people that we should re-examine the basis of our reluctance to use it." This conclusion after such remarkable figures leaves me bewildered. I wonder if you could find space to explain such reluctance.

Hypodermic Injection Technique

Mr. G. H. COLT (London, W.1) writes: As regards the pain of the prick of a needle, it seems that only a few medical men think of and use a light application of the ethyl chloride spray—mere dash of it, as it were. This does not harden the skin, but renders the prick of the needle painless. I learnt its use from a dental surgeon who has employed it for many years in giving some 30,000 intravenous anaesthetics, in which the pinching up of the skin is difficult. If someone would lay down a technique for abolishing the muscular and fascial pain and tenderness which so often follow deep injections it would help. Perhaps the inclusion of a suitable analgesic in the ampoule would answer the purpose, as is accomplished by the addition of urethane to quinine, only a long-acting one. So many patients complain that neither side of their anatomy is ever available for sitting on once the course of injections in that region has been begun. Laboratory workers do not always sufficiently realize the home or hospital position of the patient.

Ban on Heroin

Dr. W. R. WILSON (Doncaster) writes: May I through you remind my colleagues of what I fancy has fallen rather into disuse—that is, troch. morph. (1/32 gr.—2 mg.) et ipecac. Half of one will often stop an irritable cough, and if that fails another half can be sucked quite soon, and another in an hour. They are as good as any linctus, except for children, and simpler and cheaper.

Obituary

R. H. A. PLIMMER, D.Sc.

We record with regret the death on June 18 of Professor R. H. A. Plimmer, professor of chemistry at St. Thomas's Hospital Medical School from 1922 to 1942. He was 78 years of age.

Robert Henry Aders was born on April 25, 1877, the eldest son of Alfred Aders, of Manchester; later, he adopted the surname of his stepfather, Henry George Plimmer, F.R.S. He was educated at Dulwich College and at University College, London, where he was a student in the time of Sir William Ramsay, and graduated B.Sc. from London University in 1899. He studied further at the universities of Geneva and Berlin, and while in Germany was engaged in research on protein chemistry under Emil Fischer. From 1902—the year in which he proceeded to the D.Sc.—to 1904 he was a Grocers' Company Research Student at the Lister Institute, and then went to University College, London, where he was closely associated with Starling and Bayliss in the development of the Institute of Physiology. Plimmer successively held the appointments of assistant (1904), fellow (1906), assistant professor of physiological chemistry (1907), and reader in physiological chemistry (1912–19) at the college.

In 1908 Plimmer was co-editor with the late Sir Frederick Gowland Hopkins of *Monographs in Biochemistry*, to which *The Chemical Constitution of the Proteins* was his own contribution. It was in January, 1911, that Plimmer and J. A. Gardner convened a meeting of British biochemists to consider the formation of the Biochemical Club, subsequently renamed the Biochemical Society. Plimmer was not only co-founder of the society but its honorary secretary and treasurer in 1911–12 and honorary secretary from 1913 to 1919. From 1929 onwards he was a trustee, and in 1943 he was elected an honorary member. He was also the author of *The History of the Biochemical Society, 1911–49*. Plimmer's work at the Royal Army Medical College in the first world war was of the highest order and directly contributed to the national survival, as he carried out research into the energy value of foods and prepared hundreds of numerical tables which were afterwards published.

After the war Plimmer was appointed head of the biochemistry department at the Rowett Research Institute, Aberdeen. There he carried out many experiments to assay the biological value and vitamin content of common foods, and he became the popular expositor of the vitamins at a time when their importance was little understood by the public at large. He lectured to various societies, and in collaboration with his wife, formerly Miss Violet Geraldine Sheffield, whom he married in 1912, wrote a popular little book for the layman entitled *Food, Health, Vitamins* which ran into nine editions. This grew out of an earlier work, *Vitamins and the Choice of Food*.

In 1922 Plimmer was appointed to the chair of chemistry at St. Thomas's Hospital Medical School, an appointment which he held with distinction for 21 years. His book, *Organic and Biochemistry*, had been written for the medical students at University College, to whom he taught organic and physiological chemistry, so that he was already an established and experienced teacher when he came to St. Thomas's. There he taught chemistry (inorganic and organic), biochemistry, and toxicology to the students, and elementary science to the nurses. The hospital also used his experience as an analyst by appointing him consulting chemist. The same planning ability that had helped to bring the department of physiology into being at University College enlarged and improved the chemistry department at St. Thomas's. Despite the heavy calls of routine duties and lectures, Plimmer continued to pursue his own researches into protein analysis and the feeding experiments begun in Aberdeen. The results of the latter were published in the *Biochemical Journal*, to which he was a contributor as well as to the *Journal of Physiology* and the *Journal of the Chemical Society*.

In 1940 the medical school was evacuated to Godalming, where the department was divided between Charterhouse School and Manor House. Plimmer retired in 1942, but, being too active and energetic to rest on his achievements, became lecturer in biochemistry at the Postgraduate Medical School of London. In 1944 the title of professor emeritus of chemistry was conferred on him by the University of London.

As a teacher Plimmer insisted upon punctuality, but seldom finished his lectures on time. It is said that in his last lecture, delivered in an air-raid shelter before his department was evacuated from St. Thomas's, he liberally overran the appointed hour without realizing that the raid was over. But it is his warm-hearted generosity and kindliness that will be best remembered. His ties with the medical school at St. Thomas's continued to be close after his retirement, and he was a familiar figure at the Christmas shows. His chief recreation was motoring, though he also enjoyed good music and cricket. His car licence was one of the earliest issued, and he spent many motoring holidays on the Continent, where his work was well known. He was a life member of the Société de Chimie Biologique. Mrs. Plimmer died in 1949; there were one son and three daughters of the marriage.

W. JOHNSON SMYTH, M.D.

We record with regret the death on June 22 at his home at Bournemouth, five days before his 91st birthday, of Dr. W. Johnson Smyth, a former member of the Council of the British Medical Association and for many years a representative in the Representative Body.

William Johnson Smyth was born at Killalief, Co. Monaghan, in 1864, and received his medical education at Edinburgh University, where he graduated M.B., C.M. in 1887, proceeding to the M.D., with honours, three years later. At Edinburgh he was junior and senior medallist in anatomy and he also gained a medal in midwifery and diseases of women and children. For a time he was demonstrator in anatomy in the university. An early interest in the problem of mental disease led him to appointments at the Essex County Asylum, Brentwood, and the Kent County Asylum, Maidstone. In 1890 he was awarded the certificate of efficiency in psychological medicine of the Medico-Psychological Association of Great Britain and Ireland (now the Royal Medico-Psychological Association) and the bronze medal of the association for an essay entitled "An Inquiry into the Blood and Urine of the Insane," which was printed in the *Journal of Mental Science*. In 1892 he joined the Army Medical Staff as a surgeon lieutenant in the Grenadier Guards, subsequently attaining the rank of surgeon captain.

Johnson Smyth left the Army in 1897 to become medical superintendent of the Bournemouth hydropathic establishment, and there he introduced new methods for the physical treatment of patients. It was not until towards the end of the second world war that he gave up active work, but even after he had retired he maintained a keen interest in the establishment, the name of which had become synonymous with his own in the medical profession. Much of his spare time was given to the interests of the British Medical Association and to local government. A member of the B.M.A. for sixty-eight years, he served on the Council in 1908–9 and again from 1914 to 1921, and for some five years he was a member of the Finance Committee. For shorter periods he was a member of the Journal, the Public Health, and the Hospitals Committees. He was president of the Dorset and West Hants Branch in 1922–3, and his presidential address, on sleep and sleeplessness, was printed in the *British Medical Journal*. When the B.M.A. held its Annual Meeting at Bournemouth in 1934 he served as a vice-president of the Section of Balneology and Climatology. On nineteen occasions over a period of more than thirty years (1904–34) he represented his constituency at the Annual Representative Meeting. At Bournemouth he was a member of the town council for many years, and had served as chairman of its public health committee. He was a keen supporter of the Royal Empire Society, to which he was elected an honorary life fellow, and was chairman of the Hampshire and Dorset branch; he was also president of the Loyal Irish Society of Bournemouth and district. A justice of the peace, he served regularly on the local bench for many years. During the first world war he was in command of the 1st Hampshire Field Ambulance. He leaves a married daughter.

THEODOR THJÖTTA, M.D.

Professor Theodor Thjötta, the Norwegian bacteriologist, died suddenly on June 12, a few days before his 70th birthday.

As a young man Theodor Thjötta served several years before the mast, and it was while in hospital in South Africa suffering from a hand injury that he decided to read medicine. His bacteriological career began under Haaland at the Gade Institute in Bergen, where he studied dysentery, and his doctorate thesis in 1918 dealt with dysentery in Norway. In 1919 he was placed in charge of the recently established Army Bacteriological Laboratory, which he made one of the leading bacteriological institutes in Norway. His appointment as professor of bacteriology and serology at Oslo in 1935 encouraged him to create the University Bacteriological Institute out of a few small rooms in an old building of the Rikshospital in Oslo. The third bacteriological institute to be developed out of nothing by Thjötta owed its origin to his personal friendship with the shipowner W. Wilhelmsen. This organization, the Kapt. W. Wilhelmsen's og Frue's Bacteriologiske Institut, also in Oslo, began to function when Norway was invaded by the Germans in 1940, and it now ranks as one of the most modern bacteriological laboratories in the world.

Some 300 scientific works have been published by the staffs of the three bacteriological laboratories created by Thjötta, whose textbook of bacteriology, serology, mycology, protozoology, and virology has become a standard work. He was also the first to report tularaemia in Europe outside Russia. Thjötta maintained his interest in the sea throughout his life as a ship surgeon, a fisherman, and a sailor. In his summer home on the south coast of Norway he surrounded himself with many trophies from the sea and other outward and visible signs of a catholic taste for biology in its widest sense.

G. M. KHAN BALOCH, M.D., M.R.C.P.

Professor G. M. Khan Baloch, professor of medicine at Lahore, Pakistan, died on April 23, after a long illness, at the age of 44.

Ghulam Muhammad Khan Baloch was born in 1911. He graduated in medicine from the University of the Punjab in 1933 and proceeded to the M.D. in 1944. He came to England in 1946 with a Government of India scholarship, and studied diseases of the chest and heart at Hairmyres Hospital, East Kilbride, and at Preston Hall, Maidstone. In 1947 he was elected a Member of the Royal College of Physicians of London, and, on his return to the newly created Dominion of Pakistan later in the same year, became a member of the staff of the department of medicine of King Edward Medical College at Lahore. At the time of his death he was professor of medicine in the Fatimah Jinnah Medical College for Women at Lahore. Khan Baloch was treasurer of the Pakistan Association for the Advancement of Science and secretary of the Punjab branch of the Pakistan Medical Association. In 1953 he acted as president of the medical section of the Pakistan Science Conference.

Dr. A. R. OLIVER, who had been in practice at Burnley for the last 15 years, died at his home there on June 2 at the age of 55. Arthur Ruskin Oliver, who was born on January 20, 1900, spent his early life at Edinburgh, and was educated at George Watson's College, where he won his cap for both Rugby football and cricket, and at Edinburgh University, where he graduated M.B., Ch.B. in 1928. He then held appointments as house-surgeon at Edinburgh Royal Infirmary and senior house-surgeon at the Clayton Hospital, Wakefield, before entering general practice at Rochdale in 1929. He moved to Burnley in 1939, but was mobilized a few months later as a lieutenant in the R.A.M.C., T.A. He was among those evacuated from Dunkirk in 1940, and later he was wounded while serving in Crete. After recuperating in South Africa, he returned to complete his Army service in Britain. On demobilization he went back to his practice at Burnley, becoming also anaesthetist to the Victoria Hospital and a member of the disablement board of the Ministry of Pensions and National Insurance. He was awarded the Territorial Efficiency Decoration in 1951. Dr. Oliver, who bore his final illness with great fortitude, was a man of great charm and generosity, and had a wide knowledge on many subjects. A skilful and successful fisherman, he was never happier than when on the river: he had a practical knowledge of most of the rivers of England and Scotland, and wrote a book and many articles about the art of fishing. He is survived by his widow and one son.—J. S. O.

Dr. W. SCOTT WATSON died at his home at Londonderry on June 5 at the age of 52. William Scott Watson was born at Londonderry on January 4, 1903, the fourth son of the late Mr. Robert Watson, one-time high sheriff of the city, and was educated at Royal College, Londonderry, and at Queen's University, Belfast, where he graduated M.B., B.Ch. in 1926. After graduation he held house appointments at Southport General Infirmary, the Royal Victoria Hospital, and the Maternity Hospital, Belfast, and then became tutor in obstetrics at Queen's University.

Later he was resident medical officer at Craigavon Hospital for war-disabled patients at Belfast. About this time he was contemplating a career as a specialist in obstetrics and gynaecology, but in 1933 he elected to enter private practice at Londonderry, where he quickly established himself as a first-rate general practitioner. He was attending a patient when he was taken ill only four days before his death.

Dr. J. A. L. JOHNSTON writes: Scott Watson was the best type of general practitioner that could be imagined. He worked early and late; he never spared himself. Nothing was too much trouble to him in the interests of his patients, who were to be found among all classes and creeds: he was the same to all and all were the same to him, and that is why a whole city and district mourns his passing. Maternity work was his special interest, and many of his colleagues in country districts, recognizing his skill in this difficult and exacting practice, sent him their cases when trouble was brewing or expected, in the full knowledge that he would never let them down. For some ten years before the passing of the Health Services Act (Northern Ireland) in 1948 he was on the staff of the Londonderry City and County Hospital as assistant obstetrician and gynaecologist. Scott Watson always kept himself abreast of current medical affairs, and in 1953–4 he was chairman of the Londonderry Division of the British Medical Association, a position he occupied with distinction. Among outdoor recreations his main interest was in golf. While an undergraduate he played for Queen's and this year he was captain of the North-west Golf Club at Lisfannon, Co. Donegal. He had many connexions with the medical profession. One of his brothers, Mr. Robert Watson, is a consultant gynaecologist and obstetrician to the Northampton General Hospital, and three cousins all became doctors. He had a most felicitous married life and was the head of a very happy and devoted household. The sincere sympathy of all goes out to his widow and two daughters who survive him.

Dr. J. B. GURNEY SMITH writes: May I be allowed to pay a small tribute to an old teacher, Dr. R. A. LYSTER, whose obituary was printed in the *Journal* of June 18 (p. 1481). Dr. Lyster held the twin lectureships in forensic medicine and in public health for some years at St. Bartholomew's Hospital, and many old Bart's men will have derived their knowledge of these subjects from him. He was a first-class lecturer and made his lectures extremely clear and fascinating. He was able to illustrate his teaching from vast experience and was evidently a diligent reader of the daily press. A frequent remark of his was, "I have a cutting here," and he would use the material in the cutting to reinforce a point he sought to stress. He had a very pleasing sense of humour and told his students that he did not wish "to turn them into a set of amateur sleuths." He made very plain the various "grave risks" the practitioner was likely to encounter in the course of his daily work.

Medico-Legal

MISLEADING ADVERTISEMENT

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

Article 5 of the Labelling of Food Order, 1950 (S.I. 1950, No. 1061), makes it an offence to be party to the publication of an advertisement making a general claim that vitamins or minerals are present in a food unless a specified minimum quantity of specified substances is in fact contained in the food advertised.

On June 9, 1955,[1] a firm of advertising agents was convicted by the Chippenham justices on a summons alleging the publication of an advertisement calculated to mislead as to the nutritional value of a certain food, and fined £10. They had caused to be published in *Woman* an advertisement which stated: "Jaffa grapefruit is rich in protective vitamin A and wards off colds, 'flu, and other winter ills." An inspector of the Wiltshire County Council bought three Jaffa grapefruit in Chippenham. On analysis, one grapefruit was found to contain 1/340 of the prescribed daily vitamin requirement, whereas the minimum specified under the advertising regulations was 1/6 of the daily requirement.

For the advertising agents it was stated that they acted for the Citrus Marketing Board of Israel. It was their first experience of this type of advertising, and they had relied on an American analysis in their possession. It was not a question of advertising unhealthy fruit.

[1] *The Times*, June 10, 1955.

NOT LIABLE FOR BERYLLIUM POISONING IN 1947

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

From July to September, 1947, Mrs. Doreen Joyce Harman was employed at the Mullard Research Laboratories by Mitcham Works, Ltd., a branch of Phillips Radios. In mixing ingredients for fluorescent lighting tubes she handled beryllium oxide and zinc beryllium silicate. Some months after leaving this employment she was found to be suffering from beryllium poisoning, as a result of which she would be an invalid for the rest of her life.

Mrs. Harman brought an action for damages for negligence against the company alleging that they had failed to take reasonable care for her safety by requiring her to handle a substance which they knew or ought to have known was of high toxicity to human beings. In their defence the company claimed that they could not then reasonably have foreseen the effect that the substance would have on those who used it. Mr. Justice Gorman, before whom the action was tried, decided that the breach of duty of care alleged against the company had not on the evidence been made out. Mrs. Harman appealed against this decision, and on June 21, 1955,[1] the Court of Appeal delivered their reserved judgments dismissing the appeal by a majority.

The dissenting judgment was given by Lord Justice Denning, who observed that the beryllium compound with which Mrs. Harman was required to work was a deadly poison, a substance more like a radioactive material than a poison, and that a slight exposure to it might have fatal results which did not appear for months or even years afterwards. The company gave Mrs. Harman no warning of the danger and said that at the time they did not know of it.

At the end of 1946 the company, which had previously bought fluorescent powders from suppliers like the General Electric Co. and British Thomson-Houston, decided to make some for themselves. When they put Mrs. Harman to work on this experiment they knew nothing of the danger and said they had no reason to suspect it, and that their previous suppliers had never hinted that there was any. They admitted that if they had had a suspicion they would have made a search which would have put them on their guard. In an issue of *American Chemical Extracts* for November 20, 1946, which was in their library, there was an entry showing that these beryllium compounds were dangerous, and an American article there referred to was then available in the Patent Office Library and probably in the library of the B.M.A. Their medical officer had said in evidence that all the relevant American literature at the end of 1946 was in the B.M.A. library.

Lord Justice Denning said that they ought to have suspected the beryllium compounds and called in their medical officers to advise them whether it was safe to use them, and that their failure to do so amounted to a breach of duty for which they were liable. He would have allowed the appeal.

Lord Justice Birkett and Lord Justice Parker, in their judgments dismissing the appeal, said that the growth of

[1] *The Times*, June 22, 1955.

knowledge about the nature of beryllium compounds had not been rapid, and it was a paper published in the United States in July, 1947, which first really enlightened the industry on the nature of the problem. From their past experience the company had no reason to suspect any toxic dangers. At the end of 1947, after Mrs. Harman had left, they had issued a memorandum drawing attention to the danger, of which they were then aware. The company was not under a duty of care so stringent as to amount to a guarantee of safety when they had no knowledge of the danger and all their previous experience was to the contrary.

The appeal was accordingly dismissed, but leave to appeal to the House of Lords was granted.

FAILURE TO ATTEND PATIENT ON TROLLEY

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

On June 20, 1955,[1] judgment was entered for £100 damages for Mrs. Emma Ellen Smith in an action which she had brought against the Lewisham Group Hospital Management Committee.

Mrs. Smith's case was that on March 17, 1953, being then 86 years old, she was admitted to Lewisham Hospital as an emergency case suffering from acute cholecystitis. She was in a frail condition and in considerable pain. On admission she was put on a four-wheeled trolley about 2 ft. (60 cm.) wide and 2 ft. 6 in. (75 cm.) high which had no suitable protection to prevent her rolling off. Her son, who had accompanied her to hospital, said that she was wheeled into a cubicle, that the doctor and a nurse, after seeing her in the cubicle, came out and left the ward for five minutes, and that it was during the time they were away and Mrs. Smith was unattended that she fell from the trolley and fractured her thigh.

Lord Uvedale, giving evidence, said that in his hospital there was one attendant per trolley, night and day. He did not say it was improper for Mrs. Smith to have been left on the trolley unattended for four or five minutes, but having regard to her son's evidence as to the time she was left and of her condition, and to the medical reports which had accompanied her to hospital, it was unwise for her to have been left for so long, and in his opinion it was that mistake which was the cause of the injury she suffered in falling off the trolley.

The doctor and the nurse said in evidence that they had in fact never left the ward. The doctor examined Mrs. Smith and found her conscious, fully aware of the circumstances, not restless but still and awake, and that she knew where she was. He then went into the next cubicle. The nurse went to answer the telephone, and had not been gone more than 30 seconds when she heard a noise and saw Mrs. Smith on the floor. Mrs. Smith's condition had been such that it never entered her head not to leave her alone.

After the fall Mrs. Smith was in hospital for nine months and then went home, later returning for the removal of the pin which had been inserted. As a result of her age and not of the injury she had become senile, and was now being looked after in hospital and was quite happy and content, although she did not know people.

Mr. Justice Gorman, in summing up to the jury, directed them that the foundation of Mrs. Smith's case was negligence, which meant a failure by the hospital staff to take reasonable care in all the circumstances. Those who went to hospital for treatment were entitled to expect that the doctors and nurses would exercise such a degree of care and skill as normally skilful members of the medical or nursing profession might be expected to exercise and as accorded with the general and approved practice in the medical or nursing profession. Counsel for Mrs. Smith had admitted in his address to the jury that if Mrs. Smith had only been left for 30 seconds they might find it difficult to say there had been negligence.

After an absence of two and a half hours the jury returned a verdict for Mrs. Smith, and after a misunderstanding over the question of damages and a further retirement awarded her £100. They added a rider to the effect that someone should be in attendance at all times on a patient on a trolley or else the trolley should be provided with guard rails.

Moving, after verdict, that judgment should not be entered, counsel for the management committee submitted that there was no evidence on which the jury could find negligence, and that the rider showed that they had not understood Mrs. Smith's case. Mr. Justice Gorman said, however, that there was the evidence of Mrs. Smith's son, which it was open to them to accept, that she had been left unattended for four to five minutes, and that they could accept if they wished the evidence of Lord Uvedale, based on the evidence of the son, that to leave her unattended for that time in those circumstances was unwise and a mistake and the cause of her injuries and that she ought not to have been left.

Judgment for Mrs. Smith for £100 was entered accordingly, and a stay of execution was refused.

[1] *The Times*, June 21, 1955.

ALLERGY TO HAIR DYE

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

In 1947 Mrs. Elsie Florence Ingham suffered from puffiness of the eyes two days after having her hair dyed with "inecto." She consulted her doctor, who told her that he suspected it might be the inecto which had caused the trouble, and she ceased to use it. In September, 1951, she started to go for her hairdressing to Maison Emes in Guildford, and for two and a half years she had her hair regularly tinted there by the same assistant.

In March, 1954, she was getting tired of henna shampoos, and the assistant suggested that she should try inecto and said that she must have a test first because it was dangerous. Mrs. Ingham did not tell her about the incident in 1947. The assistant performed the test on March 9, 1954. Two days afterwards Mrs. Ingham came back and the assistant told her after examination that her skin was properly clear and that she was not a reactor and could safely have inecto. On March 16 her hair was done with inecto, which undoubtedly caused the acute dermatitis from which she was suffering within a few days.

Mrs. Ingham brought an action in the Guildford County Court alleging a breach of the hairdresser's implied warranty that the inecto was suitable for use on her, and the county court judge found in her favour and awarded her £60 damages. The hairdresser appealed.

Delivering a reserved judgment[1] in the Court of Appeal, Lord Justice Denning said that it appeared from the evidence that Mrs. Ingham was one of the rare people who were allergic to a large dose but did not react to the ordinary test. But for her previous trouble with inecto she would have been entitled to succeed, because when the assistant told her that if she passed the test she could safely have inecto there arose an implied warranty on the hairdresser's part that it was reasonably fit for dyeing her hair. But as she knew from previous experience that she might be allergic to inecto she ought clearly to have made that known to the assistant, who would then never have used it.

The situation was like a case where, if a doctor suggested penicillin and the patient knew from previous experience that he was allergic to penicillin, the patient ought to tell the doctor so, and if he did not could not afterwards complain if he was injured by the penicillin.

Lord Justice Birkett and Lord Justice Romer delivered concurring judgments, and the hairdresser's appeal was accordingly allowed.

[1] *The Times*, June 23, 1955.

Medical Notes in Parliament

Social Work Inquiry

The committee of inquiry into the scope and training of social workers in local authority service has been established. The MINISTER OF HEALTH announced on June 23 that Miss Eileen Younghusband would be the chairman of this working party, and the members would be:

Mr. R. Huws Jones (director of social science courses, University College of Swansea), vice-chairman; Dr. P. Crawford McKinlay (general practitioner, Beverley, Yorkshire); Miss R. Addis (National Association of Mental Health); Professor A. B. Semple (Medical Officer of Health, Liverpool); Mr. C. G. T. Berridge (Clerk of the Essex County Council); Mr. T. Tinto (Glasgow Corporation, Health and Welfare Departments); Mr. P. S. Taylor (Chief Education Officer, Reading); Mrs. P. E. Steed (home help organizer, Leicester); Miss E. Swallow (senior almoner, Buckinghamshire County Council).

On May 4 Mr. IAIN MACLEOD stated that the purpose of the working party would be "to examine the proper field of work and the recruitment and training of social workers at all levels in the local authorities' health and welfare services under the Health Service and National Assistance Acts and in particular whether there is a place for a general purposes social worker, with an in-service training as a basic grade."

Toxic Chemicals in Agriculture

The third report of the working party under Professor Zuckerman on the use of toxic chemicals in agriculture was published on June 23. Mr. HEATHCOAT AMORY, Minister of Agriculture, Fisheries, and Food, stated in a Parliamentary reply that this report completed the working party's survey of the precautionary measures needed. The view was expressed in the report that in a normal season in Britain the number of casualties to wild birds and animals caused by spraying was not particularly high compared with other causes of death. The working party did not consider that further legislation was needed at present. They recommended that the knowledge of the subject they were asked to review should be extended urgently by further research. They recommended that risks to wild life, both flora and fauna, arising from the use of toxic chemicals in agriculture, should be kept under review by the interdepartmental advisory committee set up in accordance with the recommendations of their second report, and that the committee should include representatives of nature conservation interests. Finally, it was recommended that the importance of certain precautionary measures should be clearly made known to spraying contractors, farmers, growers, and beekeepers.

Tuberculosis in Scotland

Mr. NIXON BROWNE, Under-Secretary, Scottish Office, informed Miss M. HERBISON (Lanarkshire, North, Lab.) on June 21 that at the end of April 334 men and 199 women in Scotland suffering from respiratory tuberculosis were waiting for hospital beds. He was asked for a detailed statement on the methods used to reduce the waiting-lists, and summarized the main factors as being the availability of more beds, advances in treatment techniques leading to shorter average periods in hospital, and more extensive use of domiciliary treatment in suitable circumstances.

The peak figure reached by the waiting-list was 3,018 in June, 1949, and the list stood at over 2,000 throughout the five years before June, 1951. Thereafter it varied between 1,600 and 2,000; at March, 1954, it stood at 1,997. Since then it has declined rapidly, reaching 515 by the end of 1954. Advances in treatment, especially the more extensive use of drugs such as streptomycin, P.A.S., and isonicotinic acid hydrazide, had made it possible to curtail the average period which patients have to spend in hospital. It seemed likely that the detection of the disease at an earlier stage was also contributing to this result. In the Western region of Scotland the average duration of stay for patients discharged in 1954 was 169 days, compared with 200 days for patients discharged in 1953. For Scotland as a whole the turnover increased from 6,762 patients discharged in 1950 to nearly 10,000 in 1954. With the increase in the range and efficiency of medical treatment it was possible to treat more patients at home and as out-patients, provided home circumstances were suitable. Patients undergoing domiciliary treatment were not included in the waiting-list for hospital admission unless the disease failed to respond to treatment.

Diesel Fumes and Lung Cancer

Sir FRANK MEDLICOTT (Norfolk, Central, Nat. Lib. and Con.) asked the Parliamentary Secretary to the Ministry of Works, as representing the Lord President of the Council, what investigations were being made into the effect of fumes from diesel engines as a contributory factor in cancer of the lung. Mr. J. R. BEVINS stated on June 21 that under the auspices of the Medical Research Council the exhaust products of diesel engines under different running conditions were being examined for cancer-producing substances. Information was also being collected to discover if there was any statistical relationship between the presence of various atmospheric pollutants and the incidence of lung cancer. Sir F. MEDLICOTT said that the increase in lung cancer had coincided in a remarkable way with the increased use of oil as an engine fuel. It was stated at a recent meeting of the B.M.A. that although it might appear to be only a coincidence it was too sinister to be disregarded. Mr. BEVINS replied that, at the moment, it was simply a coincidence. It was known that diesel exhaust fumes contained a great deal of soot, which in turn contained hydrocarbons that induced cancer of the skin. It was not yet established that they could produce cancer of the lung.

Cancer of the Lung

Mr. SOMERVILLE HASTINGS (Barking, Lab.) asked the Minister of Health on June 27 what advice he had received from the Standing Medical Advisory Committee of the Central Health Services Council on cancer of the lung; and what action he proposed to take. Mr. IAIN MACLEOD said that the Standing Medical Advisory Committee had advised that appropriate action should be taken constantly to inform the public of the known connexion between smoking and cancer of the lung and of the risks involved in heavy smoking. This advice had not yet been considered by the Central Health Services Council, and he was awaiting their views.

Hearing-aids for Bedfast Patients

Mr. HASTINGS asked the Minister what arrangements he had made for the provision of hearing-aids for bedfast patients, where aids had been ordered by specialists who have seen such patients in their homes. Mr. MACLEOD stated that some hearing-aid centres arranged domiciliary visits by technicians; others gave the aid and instruction in its use by proxy. If Mr. Hastings had any particular difficulties in mind he would be glad to consider them. Mr. HASTINGS said that consultants visited people in their homes, at the public expense, and advised hearing-aids for them, but no aid was provided unless the person attended at a centre to have a cast of the ear taken. Some people were too ill to do that. Could it be arranged that the technician from the centre should visit these people in the same way that the consultant did? Mr. MACLEOD said that he would be glad to look into that.

Chiropody Service

Mr. D. FREETH (Basingstoke, Con.) asked the Minister of Health if he would consider introducing during the present Parliament a measure to extend the Health Service to cover the services of chiropodists to those whose occupations required lengthy standing, and to the aged.

Miss PAT HORNSBY-SMITH, the Parliamentary Secretary, replied that legislation was not necessary. The services of

chiropodists were already available in hospitals in the Health Service for the purpose of treating, and preventing, a disability. Financial reasons had so far prevented the Minister approving any extension of this service by local health authorities. Mr. FREETH described this as the biggest gap in the Health Service. Miss HORNSBY-SMITH replied that this was a question of priorities. They had felt that there were overriding claims on the finance available for other services.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Dr. J. A. Hislop has been appointed an Assistant Director of Research in the Department of Human Ecology from October 1, 1955, for five years.

In Congregation on May 28 the degree of M.B. was conferred on W. Atherton and J. F. Walker (by proxy) and A. E. L. de Thierry.

UNIVERSITY OF BIRMINGHAM

Professor A. P. Thomson will continue to hold office as Vice-Principal and Professor of Therapeutics for two years from October 1, 1955.

Professor W. Melville Arnott and Professor E. Brodie Hughes have been appointed representatives of the University on the Joint Standing Committee of the University, the United Birmingham Hospital, and the Birmingham Regional Hospital Board for the year April 1, 1955, to March 31, 1956; Emeritus Professor W. H. Wynn as representative until September, 1955; and Dr. A. G. W. Whitfield as representative from October 1, 1955, to March 31, 1956.

The title of University Research Fellow in Medicine has been given to Dr. W. St. Goar during the tenure of his present post.

On relinquishing the whole-time appointment of First Assistant in Neurology on September 30, 1955, Dr. J. M. Jefferson is to become a part-time lecturer in the department.

The title of Director of Graduate Studies has been changed to Chairman of the Board of Graduate Studies, and Dr. A. G. W. Whitfield has been appointed chairman of the board from October 1, 1955.

The following resignations are announced: Dr. J. M. French, Lecturer in Pharmacology; Dr. J. W. Gerrard, First Assistant in Paediatrics and Child Health; Dr. A. Todrick, Research Fellow in Experimental Psychiatry.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examination indicated:

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—P. B. Acharya, A. A. Akiwumi, S. H. Bokhari, E. J. Goold, M. A. Jafri, Prakong Kecharanantana, N. H. Khan, T. J. Malherbe, J. I. Maxwell (recommended for Warrington Yorke Medal in Tropical Hygiene), H. Medina, P. A. Y. Narayanan, Margaret C. Newmark, Bridget O'Keefe, A. V. Rao, J. B. Roy (recommended for Milne Medal in Tropical Medicine), G. Singh, S. Suksangium.

UNIVERSITY OF SHEFFIELD

Dr. Margaret Middleton has been appointed part-time Clinical Teacher in Child Health, and Mr. M. W. Reece part-time Honorary Demonstrator in Surgery.

The following have resigned their appointments: Dr. L. B. Winter and Dr. R. F. Crampton, Lecturers in Physiology; Dr. T. M. Abbas, Lecturer in Obstetrics and Gynaecology.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly comitia of the College held on April 28, with the President, Sir Russell Brain, in the chair, the following were elected Fellows of the College:

J. F. Landreth, M.B., (New Zealand), J. L. Franklin, M.D. (London), J. H. Halliday, M.B. (Australia), R. I. Macdonald, M.D. (Canada), F. E. Pilkington, M.B. (South Brent, S. Devon), R. L. Waterfield, M.B. (London), A. C. Stevenson, M.D. (Belfast), H. A. Treble, B.M. (Canterbury), J. C. Richardson, M.D. (Canada), J. F. Loutit, D.M. (Steventon, Berks), T. H. Boon, M.D. (Newcastle-upon-Tyne), R. B. Kerr, M.D. (Canada) R. N. Tattersall, M.D. (Leeds), A. C. Dornhorst, M.D. (London), W. S Sutton, M.B. (Liverpool), B. G. Parsons-Smith, M.D. (London), F. H Scadding, M.D. (Northwood), A. D. Leigh, M.D. (London), H. V. Morgan M.B. (Sudan), L. D. W. Scott, M.D. (Glasgow), D. A. Williams, M.D. (Cardiff), C. F. Hawkins, M.D. (Birmingham), R. D. Tonkin, M.D. (London), H. P. Williams, L.R.C.P. (Coventry), A. W. Williams, M.D. (Uganda), J. R. Ellis, M.B. (London), R. A. Jones, M.B. (Isleham, Cambs), E. K. Cruickshank, M.D. (Jamaica), G. Macdonald, M.D. (London), B. G. Maegraith, M.B. (Liverpool), W. A. E. Karunaratne, M.D. (Ceylon), I. de B. Daly, M.D., F.R.S. (Cambridge), K. G. V. Nylin, M.D. (Sweden), W. G. Penfield, M.D., F.R.S. (Canada), G. F. Strong, M.D. (Canada).

Sir Arthur MacNalty and Dr. E. F. Scowen were appointed representatives of the College on the Council of the Imperial Cancer Research Fund.

The following candidates, having satisfied the Censors' Board, were elected Members of the College:

J. H. Allison, M.B., Squadron Leader, R.A.F., J. B. Barlow, M.B., G. P. Blanshard, M.D., C. R. Boughton, M.B., J. A. S. Brine, M.B., F. I. Caird, B.M., A. S. Cooper, M.B., J. E. Cosnett, M.B., A. J. P. Crowden, M.B., J. A. Davis, M.B., J. B. Dossetor, B.M., F. E. Dreifuss, M.B., M. de L. Faunce, M.B., Judith M. Fitzsimons, M.B., P. Fleischl, M.B., A. D. Forrest, M.B., T. C. Gibson, M.B., M. P. W. Godfrey, M.B., K. L. Granville-Grossman, M.B., R. Hecker, M.B., A. Hordern, M.B., B. Lennox, M.D., G. D. Lumb, M.D., J. B. McFadden, M.B., D. C. Morrell, M.B., Flight Lieutenant, R.A.F., A. E. Mourant, D.M., C. G. H. Newman, M.B., I. J. Pinto, M.D., D. E. B. Powell, M.B., Surgeon Lieutenant, R.N.V.R., F. L. Richardson, M.B., R. H. C. Rischbieth, M.B., D. Rooney, M.D., J. A. Rundle, L.R.C.P., P. D. Saville, M.B., E. Schiller, M.B., D. J. Sheehan, M.D., Wing Commander, R.A.F., W. D. Smith, M.B., Eileen M. Spence, M.B., V. H. Springett, M.D., B. Tabatznik, M.B., E. J. Watson-Williams, M.B., W. Wijenaike, M.B.

Licences to practise were conferred upon the following 125 candidates who had passed the final examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and who have complied with the by-laws of the College:

N. Ahmed, Martine Y. K. Armstrong, M. J. Aylett, B. J. Bartley, Esther A. Bence, A. E. Blumenfeld, T. Ll. Bowen, T. A. Boxall, G. E. Brennan, D. E. Brooke, B. J. Brooks, J. D. Broome, E. H. Burgess, Brenda J. Butcher, P. R. Butler, P. H. Byles, H. C. I. Bywater, D. A. O. Cairns, J. J. Camp, Gillian M. Cann, Elizabeth A. Capell, J. A. Chappel, Mary D. Clarke, B. J. Clayton Payne, T. Coates, J. A. B. Crawford, E. A. P. Croydon, D. E. Dart, H. T. Davies, K. S. Davies, D. T. F. Deakin, E. R. Dingley, Patricia A. Dinkel, Elaine C. Donoghue, Denise J. Duchesne, Sheila M. Eades, P. M. Elwin, Verna P. Firth, J. D. W. Fisher, C. B. Floyd, B. H. Fookes, C. B. Franklin, A. G. Giddins, D. J. Gooding, B. G. H. Grant, Beryl M. L. Hall, R. C. Hamber, C. N. Haynes, Rita Henryk Gutt, Molly Hill, P. R. Holt, Judith C. Howard, P. J. C. Howe, J. G. J. Howell, Elizabeth A. Hudson, Rosalinde Hurley, R. H. Huzzey, D. E. Hyams, Caroline M. Jones, N. L. Jones, N. H. Kemp, D. A. Kennard, A. G. Kirk, Yuin Betty Ling, Evelyn C. Lock, J. A. London, B. H. McCombe, B. B. MacGillivray, T. A. R. Mahmoud, Barbara L. Marston, R. Mason, J. S. B. Meyer, Marion V. Miles, J. D. Miller, S. F. W. Monkman, W. P. N. Moore, J. G. Morris, A. I. Munro, M. W. N. Nicholls, W. B. Obank, F. A. Orhewere, Dolly I. Pakshong, G. Pampiglione, J. G. Parkes, G. W. Peacock, G. D. Pegrum, G. B. Phillips, T. A. Plumley, G. G. Pollock, C. A. Poulter, C. A. McI. Procope, M. J. Prophet, Elisabeth J. Rashid, V. Ratner, Avril E. Reed, G. R. E. Roberts, J. T. Roberts, B. Robertson, Doreen Rothman, T. Rowan, N. E. Rust, M. Ll. Rutter, D. E. Saunders, G. W. Scott, Joanna Sheldon, B. S. Smith, D. Staig, Barbara Y. Stockhausen, J. M. Straiton, Rhona Stringer, M. Swann, D. M. Symes, L. Tenby, Ping-Kun Teng, D. K. M. Thomas, T. J. Tiplady, P. J. Toghill, Chai-Hee Tsao, I. O. K. Udeozo, R. Unwin, Molly E. Wakely, K. Wilderspin, M. T. C. Wright, B. G. Andrews, H. C. Grocott.

The following diplomas were granted jointly with the Royal College of Surgeons of England:

DIPLOMA IN CHILD HEALTH.—L. T. Champness, and to the other successful candidates whose names are printed below in the report of the meeting of the Royal College of Surgeons of England on April 21.

DIPLOMA IN INDUSTRIAL HEALTH.—Z. Khan.

DIPLOMA IN PUBLIC HEALTH.—I. H. Seppelt.

Diplomas in Physical Medicine, in Ophthalmology, and in Tropical Medicine and Hygiene were granted to the successful candidates whose names are printed below in the report of the meeting of the Royal College of Surgeons of England on April 21.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College on April 21, with Sir Harry Platt, President, in the chair, the following were elected Fellows of the College without examination as being medical practitioners of at least 20 years' standing: Mr. R. D. Langdale Kelham, Mr. L. S. Debenham, Professor J. McCunn, and Mrs. Elfrida L. G. Hilton.

Miss Jessie Dobson was appointed Anatomy Curator; the Hallett Prize was presented to D. Singh (Patna); and a diploma of Membership was granted to Barbara Y. Stockhausen (Jamaica).

The following diplomas were granted jointly with the Royal College of Physicians of London:

DIPLOMA IN CHILD HEALTH.—Phyllis B. Banks, Rosalind A. Barnes, Yvonne G. Beeching, M. Berger, R. J. Burns, Alison M. Bush, Adbul-Hamid I. Bustani, R. J. Cantwell, Shireen H. Captain, Verne Caradus, Marie D. Carroll, Delsya R. Conway, A. T. Cook, Josephine Cook, M. J. F. Davis, Joan M. Duncan, Bernice B. Eldred, D. W. Evans, Joyce A. Fiddick, I. W. W. Fingland, J. P. F. Fogarty, Sheila M. Forbes, Grace E. S. Forrest, Isobel D. M. Forster, Nirmala H. Gopaldas, Audrey Greenberg, Sheila M. Griffiths, Jean M. Halliwell, Christine E. E. Hammond, Heather S. Hardcastle, Felicity Harris, D. B. Hawkins, J. R. K. Henry, Pamela E. Herst, Margaret Hope, Shanti Indra, R. J. Jameson, C. C. A. Jansz, K. N. Kanwar, Daphne M. Kirkman, Ethel E. A. D. Knowles, Kyi Kyi Wain, W. J. Laurence, S. J. Lazar, B. Levin, S. Levin, S. E. Levin, J. Lissowski, Margaret B. Living-Taylor, Judith M. Macdonald, Silvia A. M. Marshall, Moira J. Martens, Ann G. Morgan, Avisa J. M. Morley, S. N. Mukherjee, P. S. Mukherji, R. J. Pett, Malathi Rajasingham, T. H. Roach, Balasubramaniam Saraswathy, Margaret Schafran, Phyllis E. Slater, G. J. R.

Soutter, C. E. Stroud, S. M. Thornton, Catherine J. Tulloch, D. J. van Pietzen, D. H. Wadelton, N. D. Walker, B. Weinstein, Joan C. Wells, Janet M. White, Kathleen M. Witham, P. Yoganathan.

DIPLOMA IN PHYSICAL MEDICINE.—R. W. Barter, D. A. Brewerton, Audrey Carey, R. P. Golden, P. H. Kendall, D. R. L. Newton.

DIPLOMA IN OPHTHALMOLOGY.—G. A. Binns, M. E. Cameron, G. V. Catford, N. K. Chatterjee, S. D. Chatterjee, F. J. Cherington, M. Cortes Valda, A. T. Daly, P. B. du Toit, Joan E. Farrar, P. U. E. M. Fechner, C. C. Grunberger, J. B. Hickey, W. D. Hopkins, I. S. Jain, M. A. Jalil, L. J. Lowth, Anne M. McEntegart, Ruth B. Mackenzie, L. Meyerson, D. O'Keeffe, J. A. Pratt-Johnson, J. H. M. Romano, G. K. Saraf, C. J. Sharp, B. K. Singh, C. Suarez, R. D. Suckling, A. Victor.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—N. A. Awad, A. R. Bergman, Gloria J. Carter, R. K. Desai, Margaret S. Dawe, W. J. D. Eberlie, M. A. Fawkes, J. Gatt, M. A. Ghani, G. S. Godiwalla, C. D. H. Gunaratne, D. D. Hilton, F. M. James, D. M. Joshi, K. K. Kapadia, J. E. H. Lahaise, A. J. Lewis, L. Linnell, J. G. McKenny, I. M. Mansoor, E. J. Monteiro, J. Parkyn, S. K. Ray, S. K. Roy, W. L. Sanders, K. A. Shami, H. Shore, R. C. Short, Jutta Singer, V. Velayudhan, T. G. A. L. Warrington, G. C. Willis, J. A. Wright.

At a meeting of the Council of the College held on May 12, with the President, Sir Harry Platt, in the chair, Dr. R. D. Langdale Kelham, Dr. L. S. Debenham, Professor J. McCunn, and Dr. Elfrida Hilton were admitted as Fellows.

The John Hunter Medal and Triennial Prize was presented to Professor Stephen L. Baker. A certificate of honourable mention for his Jacksonian Essay for 1954 was presented to Dr. Oliver C. Lloyd (Bristol).

Dr. L. C. Thomson (Ipswich) was appointed as the first Edridge-Green Lecturer, and Professor Geoffrey Hadfield and Dr. Leslie Foulds were appointed as Imperial Cancer Research Fund Lecturers.

Dr. J. M. French has been awarded a Mackenzie Mackinnon Research Fellowship, and the Begley Prize has been awarded to Malcolm Swann (Westminster).

Diplomas of Fellowship in the Faculty of Anaesthetists were granted to the following successful candidates:

P. J. Horsey, M. D. Mehta, F. Brun, A. V. Jenkins, W. Brooks, Betty R. Warltier, W. R. Lamb, P. D. Kempthorne, B. L. Day, G. G. Harrison, A. G. MacKinnon, H. P. Penn, D. B. Scott, L. M. V. Attygalle, G. W. Black, P. Hall, A. M. Reid, P. Stuart, I. D. Campbell, Brenda M. Dempsey, Margaret M. Fitzgerald, P. J. Roffey, Rosemary A. Fraser.

A Diploma in Child Health was granted, jointly with the Royal College of Physicians of London, to L. T. Champness (Melbourne).

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the College held on May 11, with Professor Walter Mercer, President, in the chair, the following candidates who had passed the requisite examinations were admitted Fellows:

L. I. Burt, P. B. Chakravarti, B. L. Cornish, M. Dinner, W. G. de Haas, Sin-Yang Fang, P. C. Grayson, A. A. Gunn, T. B. Hogarth, M. Katzen, M. Lange, J. A. MacDougall, T. J. McNair, Maung Kyaw Maung, I. G. Naim, R. L. Plowman, A. E. Richardson, E. R. Rosenberg, E. J. Sanders, S. R. Shar, J. Stevens, T. J. Thwaite, J. B. Walker.

ROYAL COLLEGE OF SURGEONS IN IRELAND

At a meeting of the College held on June 6 Mr. Ian Fraser was re-elected president and Mr. A. B. Clery vice-president.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates, having completed the final examination, have been granted the diploma of L.M.S.S.A.:

R. A. Norton, F. Heyes, A. D. Scott, M. E. Khan, G. K. Gregory, A. W. L. Beatson, A. G. Day, K. G. Mellish-Oxley, R. A. Greig, A. W. Prentice, J. G. Teall, M. A. A. M, Pelosi, D. Lyen, D. Procter.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a meeting of the Council of the College held on May 21, with the President, Sir Arthur Gemmell, in the chair, the following were elected to the Council to fill statutory vacancies: *As Representatives of the Fellows*, Professor J. F. Cunningham (Dublin), Professor T. N. A. Jeffcoate (Liverpool), Mr. H. J. Malkin (Nottingham), Mr. J. H. Peel (London). *As Representatives of the Members*, Mr. J. G. Gallagher (Dublin), Mr. T. L. T. Lewis (London), Mr. S. D. Loxton (Bristol).

The following were admitted to the Fellowship:

D. R. Beaton, R. K. Bowes, J. C. Coetzee, Mary D. Daley, L. Ll. Davey, I. Donald, A. S. Duncan, H. R. Duval, Amy D. Engineer, R. M. Haines, I. MacG. Jackson, D. F. Lawson, A. A. Moon, R. Nattrass, J. C. Newbold, R. C. Percival, B. H. Sheares, H. Stirling, C. W. Taylor.

The following were admitted to the Membership:

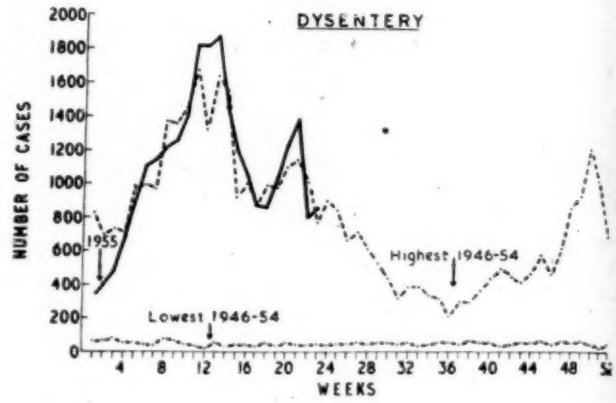
R. H. O. Bannerman, D. Barron, H. R. C. Benny, D. B. Brown, T. I. Cope, A. C. Coulthard, K. D. Drayton, W. A. W. Dutton, B. A. Gavourin, H. S. Gavourin, Tara S. Ghosh, A. P. B. Harston, Josephine M. R. Heber, Beryl O. Howie, P. E. Jeffery, Beryl M. Joles, G. W. Korn, Wendy E. Lewington, J. D. Llywelyn-Jones, Philippa M. Ludlam, J. G. Mathie, A. A. M. Mendis, D. Methuen, Catherine H. Mitchell, N. G. Mukherjee, R. N. Nag, R. T. Sears, H. B. Sinha, D. H. K. Soltau, A. E. M. Stevenson, O. S. Treisman, Yin-Kai Tsao, J. K. Tully, J. A. M. Van Belkum.

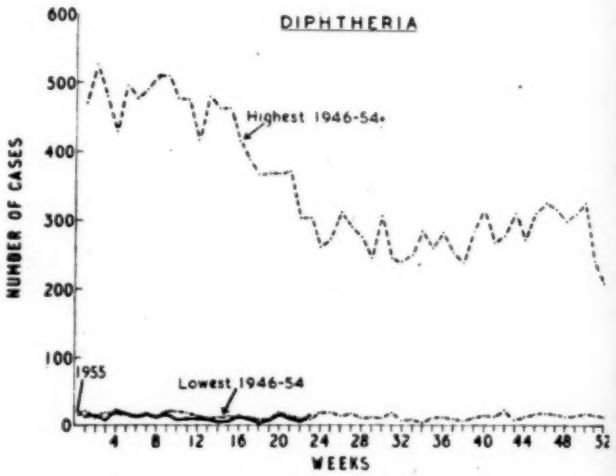
Dr. A. M. Sutherland was appointed William Blair-Bell Lecturer for 1955, and Professor Louis Hellman, of the State University of New York, Green-Armytage Lecturer for 1956.

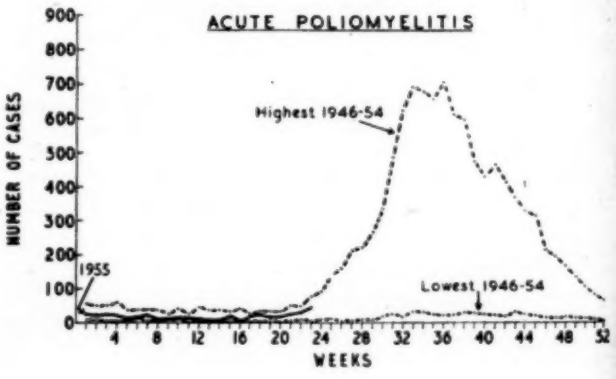
Vital Statistics

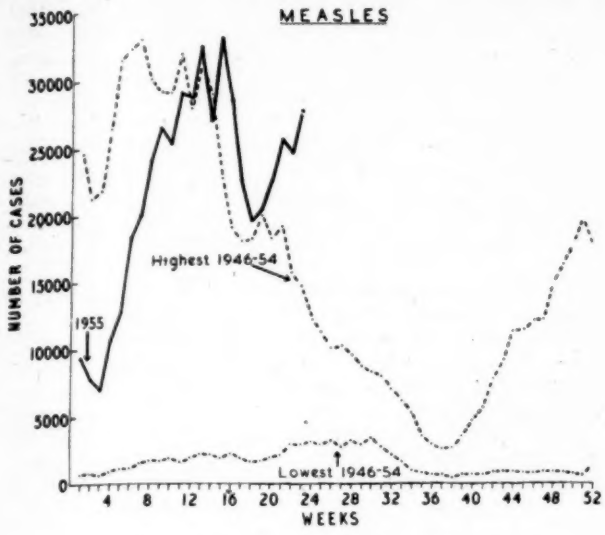
Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the nine years 1946–54 are shown thus ------, the figures for 1955 thus ———. Except for the curves showing notifications in 1955, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.









Infectious Diseases

Infectious diseases were more prevalent in England and Wales during the week ending June 11, and the rises in the number of notifications included 2,996 for measles, from 24,597 to 27,593, 578 for whooping-cough, from 1,203 to 1,781, 105 for acute pneumonia, from 384 to 489, and 51 for dysentery, from 804 to 855.

The largest rises in the incidence of measles were 501 in Yorkshire West Riding, from 1,508 to 2,009, 363 in Lancashire, from 897 to 1,260, 342 in Kent, from 1,292 to 1,634, 256 in Staffordshire, from 830 to 1,086, 229 in Devonshire, from 493 to 722, and 211 in Glamorganshire, from 1,280 to 1,491, and the largest falls were 245 in Middlesex, from 1,875 to 1,630, and 185 in Essex, from 1,566 to 1,381. A small rise in the incidence of whooping-cough occurred throughout the country; the largest locally were 143 in Lancashire, from 64 to 207, and 90 in Yorkshire West Riding, from 65 to 155. 446 cases of scarlet fever were notified, 2 more than in the preceding week; the largest local variations were increases of 24 in Lancashire, from 40 to 64, and 20 in Yorkshire West Riding, from 35 to 55. 15 cases of diphtheria were notified, being 8 more than in the preceding week; 4 of these cases were notified in Coventry C.B.

44 cases of acute poliomyelitis were notified. These were 9 more for paralytic and 4 more for non-paralytic cases than in the preceding week. The largest returns were Yorkshire West Riding 11 (Darton U.D. 2, Wakefield R.D. 2), Lancashire 7 (Liverpool C.B. 3, Salford C.B. 2), Warwickshire 5 (Birmingham C.B. 5), and Middlesex 4.

The chief feature of the returns for dysentery was a rise of 119 cases in Lancashire. The largest centres of infection during the week were Lancashire 249 (Liverpool C.B. 50, Blackburn C.B. 19, Salford C.B. 18, Oldham C.B. 17, Blackpool C.B. 16, Manchester C.B. 14, Swinton and Pendlebury M.B. 11, Middleton M.B. 10), Surrey 98 (Croydon C.B. 79, Banstead U.D. 11), Durham 73 (South Shields C.B. 17, Seaham U.D. 15), Yorkshire West Riding 65 (Huddersfield C.B. 23, Leeds C.B. 14), Cambridgeshire 32 (Cambridge M.B. 32), London 31, Cheshire 31 (Stockport C.B. 11, Dukinfield M.B. 11), Northumberland 28 (Newbiggin-by-the-Sea U.D. 14), Glamorganshire 28 (Pontypridd U.D. 17), Middlesex 26 (Heston and Isleworth M.B. 10), Herefordshire 21 (Hereford M.B. 21), and Yorkshire North Riding 20 (Middlesbrough C.B. 18).

Week Ending June 18

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 587, whooping-cough 1,666, diphtheria 10, measles 21,832, acute pneumonia 393, acute poliomyelitis 29, dysentery 859, paratyphoid fever 11, and typhoid fever 6.

INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **June 11** (No. 23) and corresponding week 1954.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1955 Eng. & Wales	1955 Lond.	1955 Scot.	1955 N. Ire.	1955 Eire	1954 Eng. & Wales	1954 Lond.	1954 Scot.	1954 N. Ire.	1954 Eire
Diphtheria	15	1	4	0	1	8	0	4	0	0
Dysentery	855	31	339	28	5	772	71	281	2	1
Encephalitis, acute	1	0		0		5	0	0	0	
Enteric fever:										
Typhoid	1	0	2	1	1	6	3	0	1	1
Paratyphoid	7	0	1	0		12	0	0	0	0
Food-poisoning	244	30		2		197	32		1	
Infective enteritis or diarrhoea under 2 years				19	16				9	39
Measles*	27,593	932	258	186	372	2,801	83	159	265	349
Meningococcal infection	23	2	13	1	3	28	3	15	0	2
Ophthalmia neonatorum	34	0	5	0		46	4	10	1	
Pneumonia†	489	21	183	4	2	335	24	138	6	1
Poliomyelitis, acute:										
Paralytic	35	3	2	0		21	1	6	1	0
Non-paralytic	9	0				5	1			
Puerperal fever§	251	39	11	2		222	37	15	1	
Scarlet fever	446	24	84	36	19	731	45	123	19	35
Tuberculosis:										
Respiratory	758	63	143	23		669	78	141	48	
Non-respiratory	103	12	24	4		108	12	15	8	
Whooping-cough	1,781	82	109	50	47	1,686	53	266	25	41

DEATHS in Great Towns	1955 Eng. & Wales	1955 Lond.	1955 Scot.	1955 N. Ire.	1955 Eire	1954 Eng. & Wales	1954 Lond.	1954 Scot.	1954 N. Ire.	1954 Eire
Diphtheria	0	0	0	0	0	0	0	0	0	0
Dysentery	0	0		0		0	0		0	
Encephalitis, acute		0			0		1			0
Enteric fever	0	0	0	0		0	0	0	0	
Infective enteritis or diarrhoea under 2 years	7	1	1	0	0	3	0	2	0	1
Influenza	6	0	0	1	2	5	0	0	0	0
Measles		0	0	0	0		0	1	0	0
Meningococcal infection		0	0				0	0		
Pneumonia	187	24	12	17	8	149	17	10	6	4
Poliomyelitis, acute	0	0			0	0	0			0
Scarlet fever		1	0	0	0		0	0	0	0
Tuberculosis:										
Respiratory	71	7	8	0	2	77	7	13	1	8
Non-respiratory		1	3	0	1		1	16	0	1
Whooping-cough	1	0	0	0	0	2	0	0	0	0
Deaths 0–1 year	204	25	23	7	14	178	20	27	11	2
Deaths (excluding stillbirths)	4,863	677	537	89	168	4,456	625	508	109	141
LIVE BIRTHS	8,184	1178	977	249	415	7,201	1298	947	242	402
STILLBIRTHS	213	17	13			186	28	36		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Medical News

Poliomyelitis Research Fellowship.—One of four annual fellowships offered by the British Memorial Fund—a fund established by public subscription in Victoria, Australia, as a gesture of "loyalty, gratitude, and affection to the British people in recognition of their role in saving civilization in the second world war"—is for poliomyelitis research (the others are in architecture, business accounting and administration, and police administration). Valued at £A,1,000, the fellowship provides for 10 months' study in Victoria for a British medical practitioner, of at least 10 years' residence in the United Kingdom and not more than 35 years of age, who has been concerned with the public health aspects of the treatment and aftercare of poliomyelitis cases in rural areas of England, Scotland, or Wales. Details from the Agent-General for Victoria, Victoria House, Melbourne Place, Strand, London, W.C.2. Closing date August 5.

West London Medico-Chirurgical Society.—Dr. W. R. THROWER presided over a good gathering of members and their wives and guests at the annual banquet of the West London Medico-Chirurgical Society on June 23 in the New Hall of the Royal College of Surgeons. Sir ARTHUR GEMMELL, P.R.C.O.G., proposed the toast of the president and the Society. Dr. Thrower in reply had some thoughtful things to say about the place of societies in medicine. In some respects, he said, medical journals had replaced some of the functions of the older societies; but in these days of arbitrary divisions of the profession into sections, he felt that societies bridged the gap between them—a necessary thing. Societies, too, preserved the humanities of medicine, and perhaps this preservation was one of the Society's greatest trusts. Dr. CHARLES NEWMAN breezily toasted the guests, on whose behalf Dr. BRIAN WARREN (president, Chelsea Clinical Society) replied. Two pleasing ceremonies concluded the formalities. First, HIS EXCELLENCY THE HIGH COMMISSIONER FOR NEW ZEALAND received for the Society from Dr. BERNARD MYERS (a New Zealander by birth, and president of the Society 20 years ago) an inscribed gavel. Secondly, Sir RUSSELL BROCK was presented, amid applause, with the Society's Triennial Gold Medal for his work on the surgery of the heart.

Ceremony at R.A.M.C. Depot.—Following a direction in his will, the medals and decorations of the late Lieutenant-Colonel A. MARTIN-LEAKE, F.R.C.S., the first man to win a bar to the Victoria Cross, were presented to the Royal Army Medical Corps on June 24. Only two others have shared Colonel Martin-Leake's great distinction, one being the late Captain N. G. CHAVASSE, R.A.M.C. The presentation took place at Queen Elizabeth Barracks, Crookham, the Corps depot. After a drum-head service the decorations were handed by Dr. HUGH MARTIN-LEAKE, D.Sc., to the representative colonel commandant of the R.A.M.C., Major-General R. D. CAMERON, who read the following message from H.M. QUEEN ELIZABETH THE QUEEN MOTHER, colonel-in-chief of the R.A.M.C.

"I have heard with the greatest interest of the ceremony you are holding to-day. The supreme gallantry and courage of Colonel Martin-Leake, of which these medals are an abiding symbol, will, I know, be an inspiration to the Royal Army Medical Corps. I am sure that these historic medals will be treasured by all ranks, not only for themselves, but as a symbol of that devotion to duty for which you have so long been famed."

In thanking Dr. Martin-Leake, General Cameron spoke of the many generous gifts the Corps had received from Colonel Martin-Leake and his family. Among these was the Gold Medal of the British Medical Association, presented to Colonel Martin-Leake after winning his second Victoria Cross. The ceremony was followed by a march past of about a hundred Old Comrades of the Corps and 700 young soldiers under instruction at the depot.

Medical By-products of Nuclear Power.—At the Atomic Energy Research Establishment at Harwell a new group has been formed, called the Technological Irradiation Group, to study ways in which the vast amount of radioactivity from the new nuclear power reactors can be put to industrial use. Quite apart from the use of radioactive products for radiotherapy, it seems probable that their sterilizing properties will have a number of medical applications. For instance, radiation can sterilize materials without raising their temperature, and this may be valuable in the preparation of heat-labile pharmaceuticals. It has already been shown that antibiotics such as penicillin or streptomycin can be sterilized in this way without loss of potency. Another advantage is that sterilization can be carried out in the product's final container, which might apply to sutures and dressings. Another field is in the preservation of homograft material. Experimental work with dogs has shown that both aortic and bone homografts can be sterilized by radiation and subsequently used with apparent success. If the same is found true of human tissues, reconstructive surgery may find itself a direct debtor of nuclear science.

Agricultural Pesticides in Scotland.—Scottish arrangements for examining blood specimens from workers handling toxic agricultural pesticides are similar to those already described for England and Wales (*Journal*, April 2, p. 841). In the north-eastern region of Scotland specimens are examined at the Regional Laboratory, City Hospital, Urquhart Road, Aberdeen; specimens from all other regions in Scotland are examined at the Biochemical Laboratory, Royal Infirmary, Edinburgh, 3.

Society of Apothecaries of London.—At a meeting of the Court of Assistants on June 21, at which the Master, Sir CECIL WAKELEY presided, Dr. R. N. IRONSIDE, physician and adviser in studies at the Maida Vale Hospital for Nervous Diseases, was elected to the Court. The triennial Gillson Scholarship in Pathology (valued at £500) was awarded to Dr. E. A. WRIGHT, a member of the Medical Research Council's experimental radiopathology research unit at Hammersmith Hospital.

Postgraduate Medicine at Oxford.—A committee for postgraduate medical studies and a director are to be established at Oxford University in the autumn. The Regius Professor of Medicine will be chairman of the committee. One member will be appointed severally by the Hebdomadal Council, the Nuffield Committee for the Advancement of Medicine, and the Board of Governors of the United Oxford Hospitals; three members will be appointed by the Board of the Faculty of Medicine; the director of postgraduate medical studies will be a member; and four other members will be persons in active medical practice in the Oxford region. The university also announces the appointment of Surgeon Rear-Admiral J. HAMILTON, at present medical officer in charge of the Royal Naval Hospital, Haslar, as the director of postgraduate medical studies. He will take up his new post on October 1.

Laboratory of Human Nutrition, Oxford.—On June 14 Congregation passed a Statute placing the Laboratory of Human Nutrition under the charge of the Whitley Professor of Biochemistry, Professor H. A. KREBS, F.R.S., thus integrating its administration with that of the existing science departments. Since it was established in 1951 the laboratory has been housed first in temporary Nissen huts at the Churchill Hospital, and more recently in a house in South Parks Road. It is planned to move the laboratory as soon as space is available into permanent accommodation adjoining the department of biochemistry in the old physiology laboratory.

American Medical Editor Honoured.—On June 5 Dr. JOSEPH GARLAND, editor of the *New England Journal of Medicine*, had conferred on him the honorary D.Sc. of

Boston University. The citation by the president of the University reads as follows:

Joseph Garland, graduate of Harvard College and School of Medicine, distinguished pediatrician, professor in Harvard Medical School, editor of the *New England Journal of Medicine*; you have contributed much to medical science, as practitioner, scholar, writer, and editor. Under your leadership the *New England Journal of Medicine* has become one of the notable medical journals in all the world. Your books range from a history of medicine to a discussion of parental care of children. Boston University honors you to-day as one of the outstanding medical editors in the world, and as a very significant contributor to medical education and medical science.

Periodicals for Refugees.—This scheme, started five years ago, is now being extended to mission schools and colleges, especially in Africa and India, where many students who need English-language magazines cannot afford to buy them. Under the new scheme, Periodicals for Overseas, second-hand periodicals will be sent to overseas educational institutions. Volunteers who would like to offer their used copies of the *British Medical Journal* for this purpose are invited to write to Periodicals for Overseas, The Grammar School, Audenshaw, Lancs, for further particulars.

Gift of Apparatus for Poliomyelitis Research.—The National Fund for Poliomyelitis Research has given £1,100 for the purchase of apparatus for research into the cardio-respiratory function of patients with bulbar paralysis. The work will be carried out by Dr. L. G. PUGH at the National Hospital for Nervous Diseases, London.

Oliver Memorial Fund for Blood Transfusion.—Applications or nominations for an award of £50 for the most notable contribution by a British subject to the research, organization, or donor aspects of blood transfusion are invited by the committee of the Oliver Memorial Fund. Applications should be addressed to Mr. F. W. MILLS, c/o National Provincial Bank Ltd., Holborn Circus, London, E.C.1, before August 31.

Sir Harry Platt, P.R.C.S., is to receive the honorary LL.D. at the midsummer degree ceremonies at Liverpool University on July 2.

Change of Name.—The Battersea Varicose Clinic (see *Journal*, November 6, 1954, p. 1117) has changed its name to the London Varicose Clinic. The address is 14–28, York Road, London, S.W.11. (Telephone: Battersea 6663.)

COMING EVENTS

Exhibition of Early Dentistry.—Dr. J. MENZIES CAMPBELL will exhibit in the Hunterian Museum, Glasgow University, July 2–9, a comprehensive selection from his collection.

Faculty of Anaesthetists.—Scientific meeting at Royal College of Surgeons, Lincoln's Inn Fields, on July 9. Speakers: Lord ADRIAN, Dr. W. GREY WALTER, Dr. B. D. WYKE, and Mr. W. BLACKWOOD. Details from the secretary of the Faculty.

Rehabilitation of the Handicapped Worker.—Three-day residential course at Cardiff, July 11–13, under joint auspices of British Council for Rehabilitation and University of Wales. Details from the general secretary, British Council for Rehabilitation, Tavistock House (South), Tavistock Square, London, W.C.1.

The Bone and Tooth Society.—A public meeting will be held at the Royal Society of Medicine on July 15 at 3 p.m., at which the Ciba Foundation's symposium on "Bone Structure and Metabolism" will be discussed.

NEW ISSUES

Ophthalmic Literature.—The new issue (Vol. 8, No. 4) and the index for Vol. 7 is now available. *Ophthalmic Literature* is a comprehensive abstracting journal with a world coverage of ophthalmic journals. Abstracts of articles of ophthalmological interest appearing in other medical and scientific journals are also included.

Six issues and a volume index each year; annual subscription £4 4s. (or in combination with *British Journal of Ophthalmology*, £7 7s.); single copy 25s.; obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

Annals of the Rheumatic Diseases.—The new issue (Vol. 14, No. 2) is now available. The contents include:

MEDICAL AND SOCIAL ASPECTS OF THE TREATMENT OF RHEUMATOID ARTHRITIS. J. J. R. Duthie, Malcolm Thompson, Moira M. Weir, and W. Bell Fletcher.
RHEUMATOID ARTHRITIS IN MALES. W. E. Miall.
DIFFERENTIAL AGGLUTINATION TEST IN RHEUMATOID ARTHRITIS COMPLICATED BY PNEUMOCONIOSIS. John Ball.
THE LIVER IN RHEUMATOID ARTHRITIS. Aaron M. Lefkovits and Irving J. Farrow.
EFFECTS OF 9-ALPHA-FLUORO HYDROCORTISONE ACETATE ON ADRENAL FUNCTION. H. F. West.
URINARY EXCRETION OF 17-HYDROXY-20-OXOSTEROIDS IN NORMAL HEALTH AND IN RHEUMATOID ARTHRITIS. Joan I. Appleby and K. J. Norymberski.
PARAPLEGIC PARA-ARTICULAR CALCIFICATION. Geoffrey Storey and W. S. Tegner.
LIVER FUNCTION IN RELATION TO POSSIBLE ABNORMALITIES OF STEROID METABOLISM IN RHEUMATOID ARTHRITIS. L. M. H. Roy, F. W. Wizzell, R. Demers, R. J. G. Sinclair, J. J. R. Duthie, S. M. Atherden, and G. F. Marrian.
COLD PRECIPITABLE HAEMAGGLUTINATING FACTOR IN SERUM FROM PATIENTS WITH RHEUMATOID ARTHRITIS. Nanna Svartz and Karl Schlossmann.
SERUM ANTIPLASMIN AND PLASMIN IN RHEUMATOID ARTHRITIS. D. P. Page Thomas and J. T. M. Dingle.
RHEUMATOID ARTHRITIS AND PSORIASIS. M. de G. Gribble.
EMPIRE RHEUMATISM COUNCIL.
HEBERDEN SOCIETY.
FIRST PAN-AMERICAN CONGRESS OF RHEUMATOLOGY, 1955.

Issued quarterly; annual subscription £2 2s.; single copy 12s. 6d.; obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Wednesday, July 6

INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., Professor E. A. Boyden (Minnesota): Development of the Bronchopulmonary Segment in the Human Embryo.

Friday, July 8

INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., clinical demonstration by Dr. J. G. Scadding.

APPOINTMENTS

BELCHER, J. R., M.S., F.R.C.S., Assistant Consultant Thoracic Surgeon, Middlesex Hospital, W.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, London, W.C.—G. G. Wyllie, M.B., B.S., F.R.C.S., Resident Assistant Surgeon; I. P. Todd, M.D., F.R.C.S., D.C.H., Part-time Surgical Registrar; R. C. Baillie, M.B., B.S., House-surgeon to Orthopaedic and Plastic Departments; Isabel G. Smith, M.B., B.S., D.C.H., House-physician; W. H. Johnston, M.D., Assistant Medical Registrar; Mrs. Ann Gatratt, M.B., B.S., D.O., Part-time Senior Registrar to Ophthalmic Department; Kathleen A. M. Frith, M.B., B.S., F.R.C.S., and J. Wilks, M.B., B.S., F.R.C.S., Full-time Senior Surgical Registrars; L. Friedlander, M.B., B.Ch., M.R.C.P., D.C.H., Assistant Medical Registrar; D. G. Cottom, B.M., B.Ch., M.R.C.P., House-physician; Aileen B. Donnison, M.B., B.Chir., Resident Medical Officer, Tadworth Court; F. L. Richardson, M.B., Ch.B., M.R.C.P., Whole-time Assistant Medical Registrar; A. C. Fairburn, M.B., B.S., and T. McKendrick, M.B., B.S., D.C.H., House-physicians; J. P. Masterton, M.B., Ch.B., D.Obst.R.C.O.G., and N. A. A. Myers, M.B., B.S., F.R.C.S., F.R.A.C.S., House-surgeons; D. A. L. Lourensz, M.B., B.S., Resident Registrar to Ear, Nose, and Throat Department; Margaret J. Francis, M.B., Ch.B., D.C.H., D.A., Junior Resident Anaesthetist.

WELCH, G. E., M.B., B.S., D.P.H., Deputy Medical Officer of Health, School Medical Officer and Port Medical Officer, Ipswich.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Gibson.—On June 22, 1955, to Jane (formerly Pinsent), wife of Professor Q. H. Gibson, Sheffield, Yorks, a daughter.

MARRIAGES

Elliott—Lings.—On June 22, 1955, at Delph Hill Church, Bolton, Ronald Witham Elliott, M.D., M.Sc., D.P.H., to Joyce Anderton Lings, both of Bolton, Lancs.

Tarnesby—von Geldern.—On June 17, 1955, in Kensington, London, S.W., H. Peter Tarnesby, M.D., D.R.C.O.G., D.P.M., of 127, Harley Street, London, W., to Ruth von Geldern, of New York City, U.S.A.

Woods—Costello.—On June 2, 1955, at The Church of The Sacred Heart and St. Edward, Darwen, Lancs, Gilbert Frederick Woods, Ph.D., to Sheila Anne Costello, M.B., Ch.B., F.F.A. R.C.S.

DEATHS

Argles.—On May 19, 1955, at Amersham, Bucks, Edgar Bernard Argles, M.R.C.S., L.R.C.P., D.P.H.

Blayney.—On May 20, 1955, at "The Priory," Trinity Road, Harrogate, Yorks, Joseph Albert Blayney, L.R.C.P.&S.Ed., L.R.F.P.S., aged 93.

Campbell.—On May 13, 1955, in Singapore, Alexander Hugh Campbell, B.M., B.Ch., aged 31.

Colbert.—On May 16, 1955, in hospital, Anthony Colbert, M.B., Ch.B., of "Whinneyfield," Tang Hall Lane, York, aged 39.

Curtin.—On May 13, 1955, at Chase Farm Hospital, Enfield, Middlesex, Jeremiah Curtin, M.B., B.Ch., of 4, Firs Park Avenue, London, N.

Strouts.—On May 9, 1955, at 98, Week Street, Maidstone, Kent, Sidney Robert Strouts, M.R.C.S., L.R.C.P., aged 89.

Udall.—On May 7, 1955, Edward Hugo Udall, M.R.C.S., L.R.C.P., of Wyke Cottage, Crowborough, Sussex, formerly of Oswestry, Salop.

Any Questions?

We publish below a selection of those questions and answers which seem of general interest. It is regretted that it is not possible to supply answers to all questions submitted.

Control of Flies from Garden Refuse

Q.—*What is the best way of controlling flies from a near-by dump of garden refuse? 2% sprays of D.D.T. and dimethylphthalate have proved most disappointing.*

A.—Although housefly maggots have been recorded as developing in a wide variety of decomposing substances (from snuff to spent hops), they do not normally thrive except in matter rich in organic nitrogen. Faecal matter, especially horse and pig dung, constitutes their preferred breeding site, and they seldom pullulate in garden rubbish unless fresh manure has been mixed with it. Other kinds of flies may breed in unenriched vegetable refuse, but they seldom enter houses or annoy man.

D.D.T. (dicophane), or indeed any insecticide, sprayed on rubbish would be quite useless to kill maggots in it because they are protected by the bulk of their breeding medium. A powder dressing of 10% D.D.T. or 0.5% gamma B.H.C. (gammabenzene hydrochloride) dusted on the surface at the rate of 1 oz. (28 g.) per square yard (0.84 square metre) has been found effective in killing the adult flies as they emerge. The margins of earth round the rubbish should also be treated, because fly maggots usually leave the damp breeding site to pupate. Applications should be made at least weekly in warm weather.

If the adult houseflies are not being affected by D.D.T. spray, it is possible that insecticide resistance is developing. This phenomenon has rendered housefly control by new insecticides virtually impossible in many areas, though it is not yet highly developed in Britain. In this case, the only alternatives are measures in use before the war: larval reduction by composting refuse to conserve heat, or by mixing borax with it at 4 oz. (113 g.) per cwt. (50 kg.); and pyrethrum sprays or poison baits for the adult flies.

Dimethylphthalate, although effective against many biting insects, unfortunately does not seem to repel houseflies.

Alcoholism and the B Vitamins

Q.—*What place have the B vitamins in the treatment of acute and particularly chronic alcoholism?*

A.—Chronic alcoholism is usually associated with chronic gastritis and achlorhydria, which tend to diminish the degree of absorption of vitamins of the B group. The accompanying anorexia leads to the consumption of carbohydrate foods, which increase the aneurine requirement. Up to about a quarter of the daily calorie requirements may be met by alcohol, which is usually taken in forms which are vitamin free. It is hardly surprising, therefore, that deficiency of the B series of vitamins has been reported in chronic alcoholics. There is satisfactory evidence that pellagra with its accompanying psychosis is met with more frequently in persons addicted to alcohol than in others on the same diet. Numerous publications have reported a relationship between aneurine deficiency and Korsakoff's psychosis, delirium tremens, and Wernicke's encephalopathy. Unfortunately the evidence that aneurine therapy relieves these conditions is far from convincing. Nor has there been confirmation of the earlier reports that alcoholic neuritis is improved by either aneurine or vitamin B complex.

It has been reported—for example, by Wordsworth[1]—that the intravenous injection of 50–100 mg. of pyridoxine (vitamin B_6) will produce rapid improvement in acute alcoholic intoxication, but this claim does not appear to have been substantiated.

Apart from the use of nicotinamide in alcohol-potentiated pellagra, there is little evidence to suggest that vitamins of the B series will produce relief of symptoms in either acute or chronic alcoholism. Nevertheless, there is an *a priori* probability of a conditioned deficiency of these substances and it is not unreasonable to administer them to chronic alcoholics. To determine whether any improvement which follows their use is due to their administration would require a controlled clinical trial using dummy capsules or injections.

REFERENCE

[1] *British Medical Journal*, 1953, **1**, 935.

Bloodshot Eyes on Bathing

Q.—*My daughter, aged 9½ years, suffers acute discomfort and conjunctival injection fifteen minutes after entering a swimming-bath and after a slightly longer period in the sea. An ophthalmologist has pronounced her eyes free from infection. Can you suggest any treatment whereby she may get relief? Is it possible that she has developed a sensitivity to chlorination?*

A.—Yes, it is possible to develop a sensitivity to chlorination, and indeed to almost any substance. On the other hand it is not particularly probable, and in this instance chlorination can hardly be blamed, in view of the fact that the child reacts unfavourably to sea-bathing as well. As no infection has been traced in her eyes, it seems probable that her conjunctivae are more sensitive than those of the average child to splashing with water, whether the water be salt or fresh. It is not uncommon for people with perfectly healthy eyes to display bloodshot conjunctivae after a bathe; and no serious harm is likely to accrue. No lotions, drops, or other remedies are likely to abolish the tendency.

Pregnancy after Mastectomy for Cancer

Q.—*I have a patient who is 16 weeks pregnant and who has had bilateral radical mastectomy for carcinoma; the second operation was in 1954. There is no evidence of metastases. Should the pregnancy be allowed to proceed? Are any special precautions indicated?*

A.—There is some evidence to show that pregnancy may stimulate the appearance of secondaries after a radical mastectomy for cancer of the breast, but this evidence, which is statistical, is not so convincing as to override all other considerations. Indeed, it looks as though this malignant influence, if it operates at all, is more effective in the early months of pregnancy than during the later months.

Common counsel to patients likely to have to face this problem is that they should refrain from becoming pregnant within three years of an operation for cancer of the breast, there being no reliable evidence that pregnancy after this time has any adverse effect on the appearance of secondary deposits.

Where a woman has become pregnant within this period, the evidence that this pregnancy might be harmful is sufficiently equivocal for the matter to be as much a human problem as a technical one, particularly if this problem is faced only in the later months of pregnancy, when any harm that might be done has already been effected. If the woman already has many children and the birth of another is of little consequence to her, it would be reasonable to terminate the pregnancy. In a woman for whom the possession of a child might make all the difference to her happiness in life, the evidence that such a pregnancy might be harmful is not so strong as to allow the doctor to take the grave responsibility of forbidding her to have one.

If such a pregnancy is allowed to continue, lactation should be avoided, if there is a remaining breast, and the baby fed artificially from birth. In arresting mammary secretion, orthodox steps should be taken such as binding the breast, but oestrogens should not be prescribed.

Head-Banging

Q.—*A little girl, aged 2 years, with 20 teeth, bangs her head on the wall and punches her face in turn. Her head has marks and scars. She is now on potassium bromide and wearing gloves and a woollen cap. Canvas sleeves or splints are being considered. She has no worms. Her brothers did this too, but are now at school and all right. What is the treatment advised?*

A.—The question does not state if the head-banging occurs during the day as well as at night. If the head-banging occurs as temper-tantrum demonstrations parental management should be reviewed, account being taken of the similar behaviour shown by the older siblings. Possible sources of irritation or pain should be investigated. Chloral hydrate in doses of 1 to 1½ gr. (65–100 mg.) thrice or four times daily could be tried instead of the potassium bromide. Hunger, heavy meals before bedtime, and constipation should be avoided, and only soft toys provided. Before being put to bed the child should be placed in a hot bath for not more than five minutes and dressed quickly in warm night attire.

If all other methods fail and if there is risk of the child hurting herself seriously, a temporary trial could be given to a plastic frame to prevent movement of the head or the neck. However, assuming there is no evidence of rickets or impaired mentality, spontaneous cessation can be expected.

Progressive Asthma

Q.—*My wife, aged 26 years, is suffering from bronchial asthma of 12 years' standing. To start with it was very mild, responding to 1 gr. (65 mg.) of ephedrine hydrochloride orally, with attacks only during the winter months. The attacks grew in intensity, needing adrenaline injections to settle them. Now there are no remissions in summer. All sorts of antihistamines, orally and parenterally, and cortisone, have had no effect. Her tonsils were enucleated last year, which gave some relief for a few months. On testing for sensitivity she was found to be sensitive to grass, tree, and flower pollens, mixed fish, and shell-fish, but the second dose of a desensitizing vaccine put her into status asthmaticus. She was treated with adrenaline in oil twice daily and adrenaline hydrochloride every two hours. Aminophyllin intravenously did not have much effect. In desperation morphine and atropine were injected, which put her out of status asthmaticus. In spite of treatment she still gets up at night gasping for breath. Repeated x-ray examination of the chest has been negative. Could you kindly suggest a line of treatment?*

A.—A history of asthma starting in the winter months and gradually but steadily getting worse to reach the severe and chronic state described suggests strongly that infection is the dominant factor. This would be confirmed by a history of colds precipitating the attacks, of periods of purulent sputum following exacerbations, and of the attacks at first being worse in the winter and better in the summer. The sputum should be examined for pus cells and for eosinophils, and should be cultured. Often in these patients the sputum is frothy, but flecks of pus can be seen. Septic foci of infection in the sinuses and teeth should be looked for.

The treatment of infective asthma is by antibiotic therapy and by measures to increase the patient's resistance. A broad-spectrum antibiotic is best used or a combination of penicillin with streptomycin, the initial choice depending on the result of sputum culture. Antibiotics should be given over a lengthy period and in adequate amounts consistent with avoiding side-effects. Attention to the general condition necessitates adequate rest, warmth, and adequate diet supplemented by vitamins. Sometimes vaccines help. In such patients there is often a background of worry or overwork, and mild sedation with amylobarbitone sodium, phenobarbitone, or chlorpromazine sometimes helps.

Fish and shell-fish should be excluded from the diet, but desensitization to fish is a dangerous and unsatisfactory procedure. Foods are unlikely to be a dominant cause of this patient's asthma, but one could be sure of this only by trial dieting—complete exclusion of any suspected food for two to three weeks followed by its readdition—and abstention if a food is definitely proved to be causing attacks. Pollens are seasonal and there is nothing in the history to suggest that pollens are, in fact, playing any part in causing the asthma, and the positive skin tests might well be ignored. Reactions to the common inhalants, feathers and house dust, are not mentioned, but it would not be difficult to remove all feathers from the bedroom and reduce house dust to a minimum. Even though they may not be the cause of the trouble there is just the outside possibility that they are playing some part in the patient's illness.

The advisability of trying corticotrophin (A.C.T.H. gel) or hydrocortisone,[1] or even of trying cortisone again, should be definitely considered. Sometimes one hormone is effective when another has failed and occasionally cortisone is effective when it has previously been found to be ineffective. The reasons are not understood, but it is just a possibility that these hormones are less effective when there is an active purulent bronchitis present than when the reaction to the infection is that of plugging of the bronchi with mucus : it may, of course, be a question of dosage.

Sedation with morphine is dangerous, and intramuscular paraldehyde is equally effective and less dangerous ; rectal paraldehyde might also be considered.

REFERENCE

[1] Gay, L. N., and Murgatroyd, G. W., *J. Mich. med. Soc.*, 1954, **53**, 33.

Oxytocics in Labour : Dangers for Twins

Q.—*A well-known textbook recommends that 5 units of oxytocin should be given intravenously to the mother after the birth of the anterior shoulder, followed by 0.5 mg. of ergometrine intravenously when the placenta has been delivered. Suppose the presence of twins had been missed, what would happen to the second twin? What is wrong with waiting until the baby has been born before giving the oxytocin?*

A.—The idea behind giving oxytocin *before* the baby is born is that it causes the placenta to separate and to be expelled from the uterus while the foetal trunk holds open the cervix. The placenta then descends with the foetal buttocks. If the injection is delayed until the third stage, it is argued that the lower segment and upper cervix are more likely to go into spasm and imprison the placenta. These considerations may well be theoretical, but practical experience appears to show that better results are obtained if an oxytocic preparation is administered as the foetal head is crowning or with the birth of the anterior shoulder, than if it is deferred until later.

The problem which arises in the case of undiagnosed twins is real, but ought not to be common. It was the subject of a recent article in the *British Medical Journal*.[1] The authors described four cases in which ergometrine was given before the presence of a second foetus was diagnosed. One of the 4 second babies was lost, but its death was not definitely attributable to the oxytocic. The danger is that a violent uterine response may fix the second foetus in an abnormal lie and cause its death from asphyxia. Moreover, attempts to carry out version and delivery in the presence of muscle spasm might lead to rupture of the uterus. These dangers are less real while the second amniotic sac is intact, so it is suggested that, in the event of an oxytocic having been given before the presence of twins is recognized, the second bag of membranes should not be ruptured until the patient is deeply anaesthetized. When the uterus is thus relaxed and a longitudinal lie of the foetus determined, the membranes can be ruptured and the foetus extracted immediately.

It may be added that it is generally recommended that the *routine* use of an oxytocic before the birth of the child and placenta should be restricted to hospital practice where professional help and other facilities for dealing immediately with unexpected developments are available.

REFERENCE

[1] Russell, J. K., Tacchi, D., and Graham, A. L. M., *British Medical Journal*, 1954, 1, 1129.

Nasal Medicaments and Ciliary Action

Q.—*Does the use of inhalers for nasal congestion damage the cilia in the nose?*

A.—The nose is lined by ciliated columnar epithelium with numerous mucous glands. The action of the cilia, moistened by the mucus, is to sweep foreign and other material from the nose into the nasopharynx. This action may be reduced or stopped if the cilia become dry, owing to disappearance of the mucus, if they become clogged by viscous liquid, or if they are paralysed by some chemical substance. Dryness may be caused by trauma or disease, or by repeated use of decongesting substances and local analgesics. The cilia may be clogged by the application, in bulk, of oily or fatty substances. They may be paralysed by local analgesics, adrenaline, and many antihistamines, especially if they are administered in any quantity.

The drug which has no inhibiting action whatever is ephedrine, and applied in saline solution it has no ill effects. Nor do aromatic substances dissolved in liquid paraffin interfere with ciliary action when applied as an extremely finely divided cloud by an atomizer or nebulizer. Most dry inhalers have no deleterious effects on the cilia; in fact many of them, by stimulating the flow of a watery mucus, may help ciliary action, and therefore can be used without hesitation and often with benefit.

Overgrown Children

Q.—*Quite often a tall, thin child is brought to one's surgery with the story of his "outgrowing his strength." Can a rapid rate of growth alone account for the lassitude of which such children complain? Often nothing else can be found, except occasionally an over-anxious parent. What investigations and treatment are advised?*

A.—When growth is unusually rapid, as sometimes happens, it can certainly cause symptoms—including tiredness and growing pains. As the condition rights itself spontaneously no treatment is necessary, but the parents should not force a child so affected to undue efforts.

Assuming the physical examination (including examination of the urine) to reveal no abnormality, the only investigations likely to be helpful are a tuberculin test and a blood sedimentation rate. A negative tuberculin test and a normal sedimentation rate would confirm that the child was well and enable the doctor to reassure the parents.

Repatriation of Europeans with Filariasis

Q.—*It is customary for some doctors in India strongly to advise their European patients with filariasis to return to their own country and not to come out again to the Tropics. The reason given for this advice is that filarial infections tend to die out in cold climates. Is this true?*

A.—If the questioner refers to infection with *Wuchereria bancrofti* it can be answered that it is not the usual practice to advise Europeans with this form of filariasis to return to their own country. Even before the introduction of diethylcarbamazine innumerable Europeans continued to live in India in spite of having the disease, and their condition did not deteriorate. When advice to leave the country was given, it was no doubt on the grounds that reinfection does not occur in a temperate climate, the original infection may be expected to die out, and the prognosis therefore improves. If, however, adequate anti-mosquito precautions are taken and a course of diethylcarbamazine is given, a person with *W. bancrofti* infection may remain in an endemic region.

NOTES AND COMMENTS

Emotional Sweating.— Mr. J. CHALMERS BALLANTYNE and Dr. J. ROLLO BALLANTYNE (Walton-on-Thames) write: We are writing to say that we could not agree less with your expert's answer to your correspondent on the subject of emotional sweating ("Any Questions?" June 4, p. 1398). He says that sympathectomy may be performed "in the last resort" in such cases, "usually with excellent results in the hands and feet but less successfully in the axillae."

As medical students, we were both tormented by "excessive under-arm perspiration," and torment it was! A new suit showed unsightly thick white lines of dried sweat in two to three weeks, and this in the middle of winter. Whilst conceding that sweating of this excessive degree was undoubtedly emotional in origin, we derived no benefit whatsoever from any of the many medical forms of treatment and would challenge any psychiatrist to influence its course in any useful way. A sympathectomy was performed on one of us early in 1940, using the other as a control. Thereafter there was no difficulty at all in answering the now-popular question, "Which twin uses sympathectomy?" A sympathectomy was performed on the other one of us later in the same year, with equally satisfactory results.

The effective level can be readily demonstrated post-operatively by the iodine-starch test, in which the whole face, neck, trunk, and upper limbs are painted with iodine and, after drying, powdered with starch. Sweating is induced by injection of pilocarpine or heavy exercise or both, when the starch goes into solution with the sweat, mixes with the iodine, and becomes dark blue. Black-and-white photography shows the effective zone very well, by contrasting the sweating with the non-sweating areas. Section below the level of the first thoracic sympathetic ganglion avoids a Horner's syndrome. Removal of the second, third, and sometimes fourth ganglia on both sides stops all sweating from the lower neck (at about the level of the cricoid cartilage) to the upper chest (above the nipple line) and includes not only both upper limbs but also, despite your expert's answer, both axillae. We were both up on the evening of the operation, had lost our clips on the third day, and were swimming in a week. In expert hands this is a minor operation, a perfectly rational and physiological one, and one of the most satisfactory in the whole of surgery. We would both prefer a second sympathectomy to a second tonsillectomy. May we take this opportunity of recommending a sympathectomy, unhesitatingly, as the first and not the last resort to anyone who "has to change her clothing several times a day because of drenching sweats"?

OUR EXPERT replies: The report of the twin doctors Ballantyne is most valuable and delightful and could not be more satisfactory. Those with patients affected will give serious attention to the experiences related.

Treatment of Bee Stings.—Dr. H. M. MOIR (Currie, Midlothian) writes: Your expert writes (May 21, p. 1296), "The sting should be gently removed." I suggest that the mode of removal is of the first importance. Most people grasp the projecting sting with the forefinger and thumb. This squeezes more venom down the shaft of the sting. The correct method is to scrape the sting off with a knife.

Dr. C. ALLAN BIRCH (Enfield) writes: The advice that the sting be gently removed is not explicit enough. Promptness is more important. The "sting" consists of the barb and poison sac and also muscles which go on contracting reflexly for a long time. Hence the dose of poison increases with time. There is no doubt that a sting quickly removed causes much less trouble than one left for some seconds. Gentleness suggests use of the finger and thumb, but this would squeeze out more poison. It is best to scrape out the sting with the finger-nail or wipe it out with a handkerchief.

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